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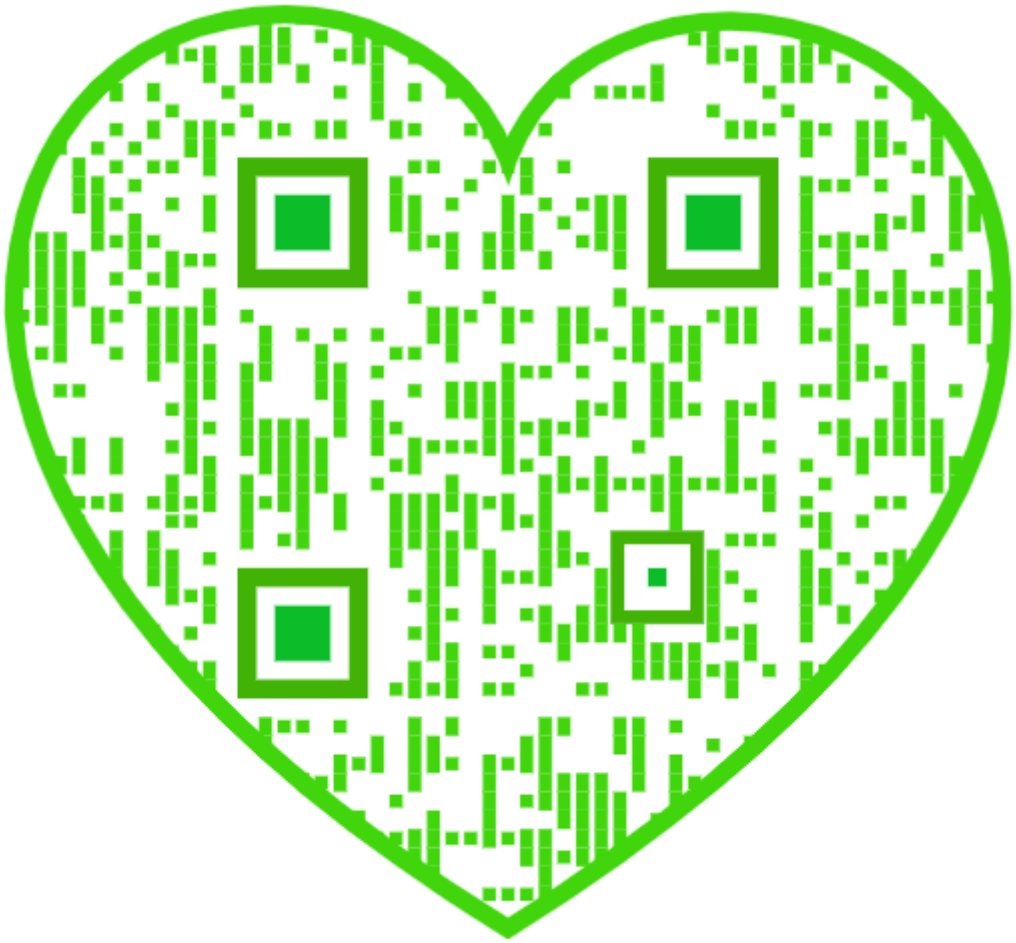

THE

AMERICAN APICULTURIST:

ESTABLISHED 1883.

A JOURNAL

DEVOTED TO PRACTICAL

BEEKEEPING.

VOL. IV. MARCH. NO. 3.

PUBLISHED MONTHLY,
BY PHILIP H. MORANT & CO.

WENHAM, MASS.
1886.

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ADDRESS

AMERICAN APICULTURIST,

WENHAM, MASS.

AGRICULTURAL

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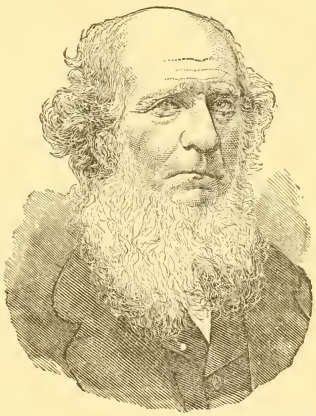
IN MEMORIAM: WM. W. CARY.

BY REV. L. L. LANGSTROTH.

Born in Coleraine, Mass., on Feb. 24, 1815, died on Dec. 9, 1884.

It affords me a melancholy satisfaction to review my long acquaintance with the late Mr. Wm. W. Cary, and to set out more fully than has yet been attempted, some of the important services which he rendered to beekeeping. To do this seems to me the more obligatory, as he so seldom used his pen for the press that these services might fail to be put on record.

After testing quite largely my movable-comb frames West Philadelphia, in the bee-season of 1852, in the fall of that year I went to Greenfield, Mass., to introduce my hive where I was best known as a beekeeper. Mr. Cary kept some bees in the adjoining town of Coleraine, and was among the first to take an interest in my invention. He was very fond of bees, and more than usually familiar with their habits—and as soon as he saw the working of the hive, he believed that it would make a revolution in beekeeping. For the six



years that I remained in Greenfield, we were in such frequent communication, that in furthering my experiments his apiary was almost as much at my service as my own.

In the spring of 1860, I was invited by Mr. S. B. Parsons, of Flushing,

L. I., to advise him how best to breed and disseminate the Italian (Ligurian) bees which he had recently imported. Finding that the person who came in charge of most of these bees could not do the work that was expected of him, I advised Mr. Parsons to secure the services of Mr. Cary. With great energy of character and good business habits, he united long experience in the management of movable frame hives with an enthusiastic desire to see the introduction of these foreign bees made a success. From my intimate acquaintance with him, I could further assure Mr. Parsons that with all these requisites for the position, he possessed in as large a degree as any one I had ever known, that "highest fidelity" which Columella, nearly 2,000 years ago, declared to be an essential qualification for the superintendence of an apiary—and which he thought was very rarely to be met with. Is it much easier to find that now, than it was then?

Mr. Cary's work in Mr. Parsons' apiary fully justified his selection, while the foreigner, in a separate apiary established by Mr. Parsons, and furnished with just the same facilities for breeding queens, failed to rear enough even to pay for the black bees and food that he used in his operations. Mr. Cary supplied all the queens needed in Mr. Parson's apiary and filled all his numerous orders.

No better proof could possibly be given of the extent and thoroughness of his work, than the fact that 113 queens bred by him that season were so carefully prepared for shipment under the joint supervision of himself and Mr. A. G. Biglow, that all except two of them were safely carried by Mr. Biglow from New York to San Francisco! Mr. B. had stopped over one steamer on the Isthmus of Panama to give his bees a cleansing flight, and one queen entering the nucleus of another, both were killed. The colonies to which they belonged, when examined on their arrival at California, were each found to have reared another queen.

To appreciate fully the extraordinary success of Mr. Cary as a breeder and shipper of Italian queens, it needs but to be stated that during this very year but few queens came alive, out of the many sent from Europe, and that for years after, a large part of our imported queens either died on the way, or arrived in such poor condition as to be of little or no value. It will be remembered by some of the old readers of the *American Bee Journal*, that Mr. Cary was the first person to send a queen across the ocean, in a single-comb nucleus, with a few workers. She was consigned to my lamented friend, Mr. Woodbury, of Exeter, England, and reached him in excellent condition. Those who now receive the queens which are sent by mail from Europe, and even from Syria, should bear in mind that only after many and costly experiments has such admirable success been secured.

After his splendid achievements in Mr. Parsons' service, Mr. Cary greatly enlarged his own apiary, and placed himself in the front rank of reliable breeders of Italian queens.

When Dr. D. E. Parmly, of New

York, imported a number of Egyptian queens, he intrusted them to Mr. Cary, having, as I know, as strong confidence as myself in his sagacity and fidelity. Mr. Cary first called my attention, in his own apiary, to the inferior appearance of the comb honey of those bees. It was capped in such a way as to look like honey damaged by "sweating"—so-called—after being kept in too damp a place. He was also the first to notice that Egyptian bees, in extending their combs, built their lower edges almost perfectly square throughout their whole length—in marked contrast to the way in which black bees build them—and improving in this respect even upon the Italians. Although I imported the first Egyptian queen, Mr. Cary had the largest experience with this variety, and after a fair trial we both discarded them as very much inferior to the Italians.

While Mr. Cary was a great enthusiast in bee-culture, and always ready to accept every discovery and improvement, he was not carried away by plausible novelties or conceits. When near him, I always took peculiar pleasure in communicating to him all matters that from time to time were engaging my attention, and our occasional meetings in later years were highly prized. He seldom failed to detect any flaw in what was submitted to his judgment, and his deliberate "yes" or "no" had greater weight with me in bee-matters than that of almost any other person.

Mr. Cary's location was inferior in honey-resources to those who in this country have achieved the greatest pecuniary success from the keeping of bees; he was also quite lame from an accident in his youth, yet notwithstanding these and other obstacles, he built up gradually a large apiary. He was not only a strictly honest man, but a highly honorable one in all his dealings; and in cases of doubt he made it his rule to give his customers the benefit of that doubt, instead of claiming it for himself. Like myself he had the help of an only son in the management of his business, but happier in this respect than myself, he was not called to lament his premature death.

Mr. Cary's interest in bees ceased only with his life. A few weeks before his death he was able to be out in his apiary, where he witnessed with much pleasure some novel arrangements for the safe wintering of a colony in the open air.

Samuel Wagner, Moses Quinby, Richard Colvin, Adam Grimm, Roswell C. Otis, Wm. W. Cary—they have all passed away! And probably no one knows better or appreciates more highly than their old friend who still survives to honor their memories, how much their various labors contributed to the splendid success of the movable-frame principle in America.

Oxford, O., Nov. 10, 1885.

BEE CULTURE IN THE SOUTH.

By G. W. Demaree.

BEE HIVES, PATENTS, ETC.

I REPEAT what I have said on several occasions heretofore, viz.: that most persons who write on bee hives,

size, depth, etc., seem to forget that this is a great country, not only as to dimensions but it is greater on account of its variety of climate, flora, etc. How is it possible that any man could lay down rules and regulations applicable to bee-culture from one end of this great country to the other?

Still we have many writers who insist on knowing just what is best for us all, no matter what may be our surroundings.

The pollen theorist knows that his bees are liable to be afflicted with diarrhœa, and hence concludes that the whole country is in the same predicament. Some one else takes a fancy to a "deep hive" and at once believes that the world would be better off if it would come to him and accept his views. The same may be said of chaff hives, and other forms of hives. I have often wondered if those who have advertised "chaff hives" all over the south, are really ignorant of the fact that chaff hives are unsuitable to a southern climate both in summer and winter, or is it a fact that they are utterly indifferent on the question of right and wrong. Thousands of chaff hives have been sold to persons who have not been in the business long enough to take care of their own interests; simply looking at it, like the old toper who claims that whiskey is good when it is cold, to warm him, and good when it is hot to cool him. The fact is the chaff hive deprives the bees of the healthful influence of the sun's rays at intervals in the winter months in all southern localities, while they are so oppressive to bees in the hot summer months that they will roost on the outside, rain or shine. I have seen half of the colony in a drowned condition after heavy rains.

The thinner the walls of the hives, the better it is for the bees if they are properly shaded in the heat of the day. If the standard thickness of lumber on the market was not in the way, I would make all my hives of half-inch boards. I only speak for my own locality.

I have long been of the opinion that the "combined implement" is a great mistake. The combined implement for the farm or for the apiary has nothing to commend it to the intelligent farmer or apiarist unless it is cheapness; and in a majority of cases, the cheap implement is the dearest in the end. No implement can possibly supply the place of several implements to the best advantage. These facts apply to the implements of the apiary as well as to other pursuits.

We have been taught from the beginning of modern beekeeping that all frames in the apiary must be of the same size, etc.; and, so reasonable does this look to most people, that the idea has been received without any careful investigation. Let us look at this old doctrine more carefully. When the movable frame was first invented, no other idea seemed to possess the mind than mere *manipulation*. Bees had carried on their labors and performed their handiwork away from the observation of man in all past ages, and now the movable frame was to lay open the hidden wonders of the internal working of the bee hive. It was like a new creation to the inquiring mind.

Is it any wonder that the idea of "manipulation" should prevail over every other objective sentiment?

This was well enough when all of us were mere students and novices, but the time has come for practical work. Thousands of families are to be fed and clothed and educated from the proceeds of the apiary, There was a time when it took years of labor and study to master the science of bee-culture, and this because it was more difficult to unlearn the blind, conceited blunders of the past, than it was to comprehend the new light that promised better things to beekeepers.

The common, narrow top-bar frames are exceedingly handy to remove when looking up the queen, or when learning to handle bees, etc. But experience has demonstrated that they are defective when it comes to practical work in the apiary. If you adjust boxes or frames, or section cases over the ordinary narrow top frames, the bees proceed at once to fill the air space with brace combs, and, when the surplus department is removed it will be found so completely united to the tops of the brood frames that some of the latter will be lifted with the cases, and, when they do break loose, the cases are left fearfully daubed with wax and dripping honey. Who is it that has not wished for a better arrangement for producing comb honey? Just the other day while I was removing a frame from the upper story of a hive, it was studded so firmly to the top of a brood-frame that the bottom bar of the frame was torn off with a part of the comb adhering, and the jar to the hive sent the angry bees whirling in the air about my ears. For several years I have been in search of a plan that will remedy this defect in the practical working of the old standard brood frame and I now believe that I have perfected a brood frame that will make honey-producing so simple and pleasant that the frame will be adopted generally, at least when comb-honey is the main crop. Several parties have written me asking for a description of my invention which I give below. I am aware that some who have patent hives and implements for sale will not look with favor on a new rival for honors in apiary work.

I am in favor of liberal patent laws, but this does not blind me to the fact that our loose patent laws have injured the bee interests of the country. Out of the eight hundred or more patents on hives and implements of the apiary, a very limited number of them embrace valuable features, and those that do, with a few exceptions, are stolen ideas. Mr. Forncrook's claim to the "one-piece section" is just as good morally and legally as nine-tenths of all the patents that have been issued. While I take no part in that controversy, I like to see all beekeepers treated alike. But I must beg pardon for digression.

My new brood-frame is made just like the standard Langstroth frame except that it has two top bars. The top bar proper is made one and three-eighths inches wide, and has a slot cut in its centre extending the full length of the inside measure of the frame. This slot is made by letting the bar down on a wabble saw and

should be about five-sixteenths of an inch. The comb bar is adjusted in the frame five-sixteenths of an inch below the slotted top bar, and is of the same width as the end and bottom bars, viz., seven-eighths of an inch. It will be seen that, when the frames are filled with combs and adjusted in the hive, they close the spaces between the frames at the top of the brood department and leave the passage-ways through the slots right over the centres of the combs. No arrangement ever devised is equal to these frames to control the passage-ways between the brood and surplus departments of the hive. When section cases are worked over my slotted top-bar frames they lift clear and clean when removing them, and in this respect they are a wonderful labor-saving device.

There are other good features about these frames. The double top-bars furnish a passway for the bees from one frame to another, which must be a great advantage to the inmates of the hive both in winter and summer but especially in winter confinement.

In the business of honey-producing ease of manipulation of the brood frames, however desirable, must give way to more important work in the apiary.[1]

Christiansburg, Ky.

FOREIGN NOTES.

By Arthur Todd.

While from England and Switzerland come reports of a fine honey flow this year, in Austria, a country bordering on Switzerland, there is a very different tale to tell, at least from one portion of that large dominion. One writer says, "The apicultural year that has just drawn to a close has not been at all satisfactory to the beekeepers of our country nor to the bees, for our jars are empty of honey and our hives are more or less deprived of sufficient provisions for the winter. The beginning of the year awoke in us (by reason of splendid weather in the month of April and the rapid increase in numbers of the bees in the hives) the most enthusiastic hopes; but shortly arrived the month of May, 'the beautiful,' which month has, however, for some time past, lost its credit with us, and the weather of that month spoiled all, and utterly destroyed what April had promised. The period of swarming came on, but the bees, as if foreseeing not much honey to gather, hesitated to create new colonies, and many small apiaries of five or six colonies saw come forth *not* a single swarm. The honey flow from the linden in June was completely spoiled by rain and high winds.

Then June came in, dry and hot, burning up all the flowers and wiping out our last hope,—the flow from buckwheat, which ordinarily indemnifies us for a failure in the spring and summer honey flow.

During the entire season there were but three days of real good honey-gathering which, as all know, is not sufficient to fill honey jars and assure provision for winter."

One of the most renowned bee-

[1] I have not written the above because I have frames for sale. I am not in the supply business.

keepers of Austria was "Von Ehrenfels" and his only living pupil is "Karl Gatter," known in Germany as editor of a bee journal. In his boyhood, Gatter would walk unconcernedly among the thousands of flying bees in the apiary, early showing that coolness in the presence of danger so much needed in a bee master.

Later on he planted an orchard and busied himself in fruit-raising and bee-raising at the same time.

In 1864 he went to Vienna specially to give the natural history of bees closer study; next he went to Norway and Sweden, then south to Italy, studying as he went the various modes of manipulation, gathering knowledge from practical sources as he went along.

Arrived in Germany, he proceeded to give instruction in beekeeping, and later on became the editor of two journals; one for bee culture, another for fruit-raising. Gradually his worth became widely recognized and the Emperor of Austria decorated him with a golden cross. Sad to say, his eyesight has failed him through overwork upon his own favorite study.

The use of camphor for curing foul brood has already been spoken of as used abroad. Madame Adele Jarrié, one of the earliest advocates of the movable frame hive in France, and whose acquaintance I have had the pleasure of personally making in Paris, gives her method of using camphor, and quantity she employed. She says she takes common powdered camphor and throws four pinches into a litre (rather more than a quart) of syrup made hot, shaken up; the camphor dissolves and it is then fed to the diseased colony. She also sprinkles powdered camphor right in the hive over the frames containing honey.

The death's head moth (*Sphinx atropos*)—great numbers of this insect have been observed in certain sections of France this year. A schoolmaster writes that daily in September his pupils would bring him several. The moth was generally caught in the evening in the houses where they entered attracted by the light. The chrysalides were generally found in potato fields at several centimeters beneath the soil and close to the roots.

This moth is not, I believe, a native of America. It is called death's-head moth, from the fact that the markings on the back of the trunk of the insect exactly resemble a skull and cross-bones. A French authority states that it has the power to emit a sharp and plaintive sound which, when uttered close to a hive of bees, causes them to become frightened and rush to the entrance, there in a mass to try and prevent its entry; and, in many districts where this moth is plentiful, inside the entrances of hives may be found regular walls built up of propolis in such a manner as to successfully exclude these insects. In the south of France particularly, and Algeria, the moth is a much dreaded enemy of the bees. Once able to enter a hive of bees, it gorges itself on the honey; they have been taken with as much as fifty grammes of honey in their stomach.

Its wings, when fully expanded, measure four inches and three-quarters across so that it is the largest of all European lepidoptera.

When I was living in Algeria, I purchased several hives of bees in which were the remains of some large insect firmly fastened to the floor boards by propolis and in some instances, completely arched over with propolis. I found these remains to be from this very moth; and one very interesting observation I made, never seen by me in any book as yet, is: that when one of these insects gets into a bee hive where the combs come nearly down to the floor board and are filled with honey, thereby giving the moth the chance to at once commence eating honey while on the floor with its wings extended out flat and ends resting on the floor, the bees will at once set about fastening the ends of its wings securely with propolis to the floor. By the time the insect is ready to change his position he is a prisoner and so firmly is the fastening made that his struggles are in vain. The bees in no case seem able, nor did I ever see them try, to sting the insect, but await death by starvation.

This accomplished, they propolis the entire body, thereby most probably confining the foul vapors of decomposition and allowing them to pass off only at such a rate as can be manipulated successfully by the ventilating bees of the hive. A row of wire nails or perforated zinc in front of the entrance I found was the best safeguard.

I have caught these moths in the very act of trying to get into hives. Friends of mine in the old country now have some of those very specimens, both the perfect moth and the mummies that I sent over to them by mail. The walls of propolis spoken of by the French writer are actual facts. I have cut out dozens of them one inch to one and a half in height and with a doubling back arrangement just like the openings left in fences of cattle fields, that a man can go through easily by simple turns, but impassable to the cow.

It is a very beautiful moth and any beekeeper visiting a good museum ought not to fail to seek it out and make himself acquainted with its features.

Huber speaks of bees stinging this moth to death in his presence and describes some experiments with them. This will appear *in extenso* in the reproduction of Huber's work now being published in the "Api."

Solar wax extractors have been recently written about, reports from California and also from Italy having appeared. It is the old story over again; somebody invents anew a thing used years back and fully described in print. Turn to pages 308 and 309 of Hamet's *Cours d'apiculture* published in Paris, 1874, and the inventors can find "copy" for their descriptive circulars and also a woodcut which will be cheaper to copy than to have an original made.

I, myself, have used one in Algeria that belonged to a gentleman who for years previously had kept bees in his native town in France and always rendered his honey and wax by means of this instrument.

It was about four feet high, square about two feet and supplied in upper part with a double glass lid under which was a large tin cone-shaped receptacle provided with trays on which were placed the broken-up combs. The concentrated rays of the sun, falling on the sloping tin sides, soon made it pretty hot inside and down ran the honey through a series of strainers into the vessel underneath. As the heat increased the wax melted and also ran down to form a cake on the surface of the honey, being afterwards taken off and remelted.

The great objection to this machine is the imparting to the honey of a flavor due to the essential oil contained in the wax.

This very solar wax extractor (just invented ! !) was stolen from my yard one night by Arabs and, strange to say, on the only night when my dog barked because any one *was* there and I was too sleepy to get up and see if any one was around. What the unfortunate Arab who stole it ever made out of it I never could learn ; it certainly would have cooked "des œufs sur le plat" or thin chops but the probability is they turned it upside down or on its side and never discovered its true use.

Philadelphia, Pa.

JOTTINGS FROM CANADA.

BY ALLEN PRINGLE.

THANKS for the apicultural literature received, and for your kind invitation. That I have not written words of greeting and congratulation to the "Api" ere this has not been owing to indifference or lack of appreciation on my part, but to pressure of work and want of time. I beg now, however, to make my bow to your excellent periodical with the cosmopolitan name of "American Apiculturist."

Of the rapid development of apiculture in Canada and the United States no better evidence is required than its periodical literature ; the number of journals devoted to the subject and the enthusiasm and ability with which they are conducted. And of all papers devoted to specialties the bee papers are undoubtedly the most ardent as well as the most interesting. This arises from the intensely absorbing and interesting character of the avocation of bee culture and the consequent inspiration of the enthusiastic devotee, which culminates in the quill and finds vent in the bee journals. Another distinguishing trait of the apiarist—and which also happily pervades the journals—is a genuine *bonhomie* which fairly runs over at conventions and, indeed, even wherever two or three beekeepers are gathered together. Of course opposite theories of diverse minds are discussed and controverted in the journals, but generally in a pleasant, good-natured style quite free from acerbity, or even discourtesy. Sometimes, however, offences creep into the management and matter even of bee papers. To this the philosopher can only say, were it otherwise editors and contributors would be simply more or less than human. And this brings me to a little matter in which

I am directly concerned, and which I must touch upon here, involving

THE AMENITIES OF APIARIAN JOURNALISM.

In the October number of the "Apiculturist" appeared an article by our Canadian friend, Mr. S. Corneil on "Improprieties in Journalism" which I read with mingled feelings of pain and surprise. In that article the *American Bee Journal* is arraigned for mutilating an article on "Apiculture," which it copied from the *Popular Science Monthly*, and also articles on "Foul Brood" which were alleged to have been copied from the *British Bee Journal*. I noticed at the time that the *American Bee Journal* had republished my article on "Apiculture" from the *Popular Science Monthly*, but was not aware of the "alterations, elisions and additions" made by the Journal until I read Mr. Corneil's article, and my thanks are due to him for directing my attention thereto. Either from over-confidence in the Journal, or pressure of work, or both, I neglected to go over the article at all. And even now, my confidence in Mr. Corneil's veracity and accuracy is such that I have not taken the time and trouble to hunt up the articles, compare them and verify the statements.

Assuming them to be correct, I must here enter my protest against the act of the *American Bee Journal* in thus mutilating my article. There are in all it seems about twenty changes made and, as Mr. C. very truly remarks, this is "unjust to the writer of the article, unjust to the publisher and deception practised upon readers." Of course we know that editors frequently take the liberty of abbreviating articles in manuscript, making elisions, and of altering words and phrases by way of correction, and this prerogative is freely conceded to them under certain circumstances; in such cases, for instance, as where the composition is defective in grammar, in spelling, etc., or where slander or personalities are indulged. But this is a very different matter from garbling an article from a standard magazine to suit the editor's own whims, caprices, or prejudices. The article on "Apiculture" needed no correction either in "manner, matter, or form" at the hands of the *A. B. J.* If it was good enough for a magazine of the character and literary status of the *Popular Science Monthly*, it ought surely to pass for the columns of the *A. B. J.*

Under these circumstances, I am justified in stating here that not one word of the original manuscript of that article was changed by the editors of the *Popular Science Monthly*, by way of correction or otherwise.

THE PAST SEASON

Has not been, on the whole, favorable in this country for honey secretion and gathering, and, as a consequence, the crop is short. The early part of the season and the latter part, too, were too cool and wet for honey. My own crop was mostly gathered in July and the last week or ten days in June. As to buckwheat honey there is next to none here this season, while in 1884 it constituted one-third of the crops.

THE PROSPECTS FOR WINTER

Are not overly assuring. As a consequence of the dearth in the fall crop of honey, brooding ceased unusually early, and, in a great majority of Canadian apiaries, stores were found to be very short. A great amount of feeding for winter had, therefore, to be resorted to. Now, feeding in the fall for winter stores, to be successful must be done right, and, unfortunately, only a comparatively few beekeepers know how to do it just right.

In the first place the food itself must be right, then it must be fed right and at the right time. If these three points are observed the artificial stores will carry them through just as well as the natural. The fall, however, has been exceedingly favorable for feeding, as the weather has been exceptionally warm since the honey flow ceased. This is Nov. 18, and we have had but two frosty nights with any considerable freezing yet. Yesterday was a fine, warm day, and the bees had a fine flight, probably the last till next spring.

WINTER QUARTERS.

I propose to winter the whole of my bees inside this season. Last winter I had thirty colonies packed in chaff and sawdust and in the Jones double-walled hives outside, and they came through about as well as those in the bee cellar. But outside wintering involves considerable work and watchfulness, and not a little anxious solicitude, especially when the thermometer persists in getting away down below zero and remaining there a week or two at a time. Now is the time to get the bee cellars and other repositories ready without further delay. Renovate them, ventilate them, make them warm ; make them dry, if possible, and make them dark ; and then if your bees are in good order, with plenty of stores and you put them in at the right time and fix them right after they are in, they will be pretty apt to show up well in the spring. "But this is all much easier said than done," you exclaim. Yes, it is ; there is no royal road of idleness leading to the goal of success in beekeeping. On the other hand "eternal vigilance" is the price of success, and let no beekeeper forget it.

But, Messrs. Editors, the length of the manuscript before me and the exigencies of your space admonish me that I have now stayed long enough for a first visit. I, therefore, bow myself out with best wishes for yourselves, your readers, and your journal.

Selby, Lennox Co., Ontario.

HINTS FOR BEGINNERS.

No. III.

BY J. E. POND, JR.

THE science (for science it most certainly is) of apiculture would possess far more votaries were it not for the mistaken idea that prevails among the uninitiated, that bees will sting (this is true) and that it is very difficult to control them. When, however, the assurance can be given that bees may, to a certain extent, be tamed, and that their weapon of offence and defence is terrible only in

name to those who understand its nature, the business will become desirable to many who are now deterred only by reason of their dread of being stung.

Our Heavenly Father gave us control of all created things lower than man, and in that power he included the honey bee. It is true He did not lay down any direct rules for the government of the lower orders of creation, but He gave us reason and common sense and, by the aid of these, we are enabled to rule and govern the lion and the tiger, and the honey bee as well. The world is full of compensations; every poison has its antidote, and all that is required on the part of man is to use the judgment and discretion that forms a part of his God-given nature, to enable him to manage and control all creatures lower in the scale than himself, and render them subservient to his views, wishes and desires. To this end, certain fixed rules may be applied; and it has been learned that, in bee-keeping, certain axioms exist, which axioms are as positive as are any of those laid down in our mathematical works. I propose to give a few of those that relate to the bee and its management, viz.: The honey-bee, when filled with sweets, whether honey or a substitute therefor, never volunteers an attack; were this not the case, it would be impossible to control it and we should be deprived of the most delicious article that ever tempted the palate,—honey.

When a colony prepares to swarm, the bees fill themselves with honey from the old hive in order that they may have something with which to set up housekeeping in their new home. This renders them extremely amiable and makes it easy to gather them into the new hive prepared for them.

Taking advantage of this hint, we have learned to handle our bees with impunity. We have learned, also, that anything that gives our bees a scare will cause them to at once fill themselves with honey or any other liquid sweets offered them. Now, knowing, that when they are so filled, they are rendered amiable, we have only to ascertain what will give them the desired scare and then we have a solution of how we can handle them without fear.

The smoke of burning rags, punk or decayed wood that will burn without blaze, is all-sufficient. Instruments called "smokers" have been invented, in which rags or wood can be burned, and the veriest novice, armed with one of these, can easily subdue any colony of bees so that it can be controlled and manipulated as he may desire.

The whole secret of bee handling lies in this: the smoker is duly charged with dry rags or dead wood so set on fire that it will yield a large quantity of smoke without bursting into flame; a few puffs of smoke from this simple instrument are blown into the hive; in a few minutes each bee has filled itself with honey, and is so amiable that so long as it is not injured personally, it can be moved and removed at the wish of the owner.

Care must be taken, however, that no bee is pinched or hurt, else its weapon will be ready to resent such injury. So long as proper care is

taken, the bees can be removed from one hive to another or can be shaken from their frames with impunity. This may be hard for the novice to believe, but it is none the less true and is the underlying principle by which modern apiculture is governed, and, by a knowledge of these simple facts, any one, no matter how small his experience, can handle a colony of bees as well as an expert.

Foxboro, Mass., Dec. 9, 1885.

EDITORIAL.

True culture carries with it a dignified simplicity of character, which, when we are brought in our researches and investigations face to face with the grand possibilities of the future, lead us to use the greatest caution in measuring great events by our own limited capacity or ability; a feature which has characterized the life-work of so many apiarists of the past, and one on which our success as apicultural teachers largely depends.

In extending to our readers our usual New Year's greeting, we can justly say that the possibility of the enslaving of apicultural interests by avaricious men for mere mercenary purposes lies buried in the past, and the new year opens with richer promises of grand developments than have ever before been deemed possible.

Apiculture, viewed in the broadest and most comprehensive sense, has a far deeper meaning than the mere keeping of bees, and the more intelligent and thoughtful apiarists are beginning to deem it an honor to be reckoned among those who are students in this branch of agriculture.

The time has arrived in the history of apiculture in this country when we have abundant reason to expect important and lasting improvements in every department of our pursuit, and as apiarists, we are warranted in looking forward to a prosperous future.

Beginning with the early teachings of Moses Quinby, Samuel Wagner and L. L. Langstroth, and following down through the intervening years to the present, the burden of the efforts of our most prominent apiarists has been to induce our government to extend to apiculture proper recognition and protection as one of the important national industries; hence, it gives us unbounded pleasure to record at the beginning of the new year the fact that through the efforts of Professor C. V. Riley of the Agricultural Department at Washington and others, government has established an apicultural department, and is conducting an Experimental Station at Aurora, Ill., under the charge of Mr. Nelson W. McLain.

Only the future will fully reveal to us a just conception of the honor conferred upon us, and the value to apiculture of the steps already taken.

We trust that those of our readers who from time to time may be called upon to render to Mr. McLain whatever assistance in his work he may deem necessary will respond with a cheerfulness and good will that will prove more than words possibly can that we recognize our great indebtedness to our government for the recognition and support so kindly granted us.

We have no hesitancy in pronouncing the Detroit convention the most important and eventful one ever held in America.

Here were, to all appearance, harmoniously buried what ever differences may have existed between the east and west, and to-day the apicultural interests of the entire country are cemented by one unbroken band of union.

While at Detroit we became more thoroughly convinced than ever before of the importance of a better

knowledge of the honey bee, its characteristics and habits, the extent to which it is affected by climatic influences and changes, the methods to be adopted in breeding queens and bees together with many other important features in the same connection.

Again, the fact that our leading chemists as yet know but imperfectly the nature and constitution of the sweets gathered from the various honey-producing flora opens up another and a rich field of investigation.

How imperfect is our knowledge of the laws which govern the propagation of bees and the methods for uniting the desirable qualities of all the races in the *Apis Americana* of the future!

We listen from year to year to the various reports from prominent apiarists regarding their success or failure in wintering their bees, and when we ask them to explain to us the conditions by which their bees were surrounded, or the causes which brought about the results, they, as a rule at least, can only say "such were the results," giving no cause.

The time will yet come when we shall be able to give a scientific explanation of the causes and conditions which govern this and other departments of apiculture so that we can proceed with the same certainty as to the results as characterize other industries and vocations.

The time has come when those whose efforts have been controlled almost wholly by mere mercenary motives must give way to those with nobler aims and greater ability who, rising superior to such motives, will devote their attention to the highest branches of apicultural education giving us the results of scientific researches, for apiculture in its highest sense is a grand and ennobling science worthy of the attention of the ablest students.

For nearly three years we have toiled incessantly in order to aid in bringing about these results and to establish a journal which would fittingly represent the interest of the beekeepers and we are cheered and encouraged with the results already attained.

One by one the ablest apiarists are coming to our support so that in the APICULTURIST can be found the richest thoughts from the most talented and successful apiarists in the world, a fact that should encourage our friends to continue their confidence in our enterprise and extend their efforts on its behalf.

The cry has gone forth that the honey market is glutted and many apiarists are becoming discouraged thereby.

In our opinion this will prove a blessing to apiculture as it will weed out all those who are unfitted for the business and those who by overestimated inducements have engaged in beekeeping expecting to reap a fortune with but little trouble or expense. Also, as "necessity is the mother of invention" it will force the beekeepers to recognize the importance of taking active measures to develop a honey market and to apply the same tact, push, and energy to their business as characterize those engrossed in other vocations and industries.

To those who wish to see apiculture prosper we would say use every endeavor to endorse, support and encourage every unselfish effort put forth to develop and foster apicultural interests, and when you find a bee journal fostering and protecting your interests, encouraging freedom of thought, keeping abreast with every advance made in apiculture, remember that every effort on your part to increase its circulation and enlarge its income will be returned to you an hundred fold in the good that will come to you from the improvements made in every branch of apiculture.

CANADIAN DEPARTMENT.

R. H. HOLTERMAN, EDITOR.

It affords us no ordinary degree of pleasure to be able, in a measure, to speak for our Canadian brethren through this department upon the Experimental Station established by the Department of Agriculture at Aurora, Ill. We no doubt all felt, and all when hearing of the establishment will feel, that, as members of the North American Beekeepers' Association, all have equal rights and privileges; but when we learned that your government had seen fit to establish such an experimental station, there was a feeling among Canadians of our indebtedness to them for such a step. We felt that, while in no financial way contributing to the station, we should share the benefits of the step; but we are sure that, if our pockets are not drawn from, we none the less extend to those who have had the wisdom to take such a step, our warmest sympathies and our best wishes. And while, as Canadians, we may for a moment have regretted that our country will not have the honor, which yours doubtless will have, of so materially assisting apiculture, we feel that individuality, nationality, all sink into insignificance, and the love for our chosen pursuit should outweigh all other feelings. As beekeepers we all realize the important place apiculture holds as a branch of agriculture; but we cannot expect every man to see with the eye of a beekeeper. The beekeepers of a land may well congratulate themselves when they have gained the ear of that department which is able to give them assistance to develop when it sees the just claims their pursuit has upon the public funds.

CORRESPONDENCE.

EDITOR AM. APICULTURIST:

DEAR SIR:

On reading under "Questions and Answers, Questions by Henry Alley," it appears that neither Mr. Alley nor any one who answered the question, "Which do you prefer, a dovetailed or a nailed section?" thought of using glue, or had ever seen a "lightning gluer" for driving and gluing section boxes together. The "lightning gluer" is a machine for driving section boxes together by foot-power and also has a glue dish attached with a wide flat brush so attached to the machine that it goes down into the glue and is raised by the same spring that raises the hammer or pounding attachment of the machine. Place the ends of the section box pieces against the brush, and a sufficient quantity of glue adheres to thoroughly stick the joints, then put the box together with the hands, place it in the machine and with four or five strokes of the foot on the lever, the box is driven together in a perfectly square form and when dry is stronger than when put together any other way. As Mr. D. D. Marsh says in his answer, "a *dovetailed*, because it looks more *attractive* and can be made of *thinner* stock;" a section box put together in that way can be made of *thinner* stock and at the same time be much stronger and more durable. I make that assertion from having had experience with all three kinds, dovetailed, with and without gluing, nailed, and the all-one-piece section boxes.

I cannot agree with Mr. L. C. Root, for I think the "average person" would make a much better box with the "lightning gluer," and put them together faster than they could nail them. Neither can I coincide with Mr. G. W. Demaree, for I cannot understand why he should call the dovetailed sections too "cranky" for his use and patience. I consider

the dovetailed *and glued* sections by far the best in use and, as Mr. G. H. Martin says, "Dovetailed are more quickly together;" so they are, but not as Mr. Will M. Kellogg says, for the dovetailed *and glued* sections can be "tumbled in a heap in the corner, or dropped on the floor with much more certainty of staying in shape than can either nailed or all-one-piece sections." Then as to "putting them together beforehand," they can be put up years before they are used and be just as good as if put together but yesterday. I am surprised at Mr. K.'s answer. Mr. Manum of Bristol, Vt., advertises dovetailed sections at the same price as those to be nailed; so you see, that answers Mr. Pond's question as to the price being greater for dovetailed than for nailed.

If sections are put together without gluing they are very liable to fall apart, for the bees do not always attach their combs so firmly to all sides as to hold them securely together. I beg your pardon, Mr. Editor, for intruding my remarks upon the above question at this late day, but as I am such a strong advocate of the dovetailed *and glued* sections, that I could not refrain from giving my views which are free and in good will to all, and hope they will find a place in the January number of "Api," 1886. My answer to Mr. Alley's question is "dovetailed *and glued*, above all others."

A. P. FLETCHER.

Ludlow, Vt.

NOTES AND QUERIES.

—On our return from Detroit we visited a number of prominent honey commissioners and learned beyond doubt that the beekeepers of this country *must* educate the public regarding the value and uses of honey together with the fact that honey producers *do not* adulterate or sell any adulterated honey, ere we are relieved from the fear of a glutted market.

As we have always stated, the beekeepers are responsible for the present condition of the honey market and one of the first and most important subjects for consideration is how we can more speedily and successfully educate the masses regarding the habits of the bee, the methods of obtaining honey, and the value of the latter as compared with commercial sweets manufactured in our own country and those imported from foreign sources.

The thanks of American apiarists are due to Mr. McLain for the able and pointed statements regarding this subject made by him at the Detroit Convention.

In due time Mr. McLain will speak through the "Apiculturist."

—Mr. Heddon's position regarding the value of shallow frames (say about six inches deep) in the production of comb-honey is calling forth many interesting comments, and our readers may expect ere long to hear more from the "Apiculturist" on this subject.

—One of the most pleasant and valuable experiences of our late visit to Detroit was our association with Father Langstroth; and to-day, as never before, we are impressed both with his almost more than noble manhood and the value of his efforts and researches in behalf of apiculture. We look forward to the day when American apiculture, reaching the high and honored position that it is destined to occupy, will accord not only to Father Langstroth but to Moses Quinby and other self-sacrificing and able apiarists the credit due them for their untiring efforts to benefit their brother beekeepers.

—The *British Bee Journal* in referring to the intention of the Cana-

dian beekeepers to make a large display of honey at the Indian Exhibition at London next season, says, "We can only hope that our Canadian cousins will abstain from sending us glucose with a 'spice' of comb honey floating in its centre."

In our opinion this note will mislead the public regarding the value of American and Canadian honey and the character of its producers. Is it right or just to leave the public to suppose that on this side of the water beekeepers *do* place such a mixture on the market?

The question of the adulteration of honey is coming up on every hand and as we yet have to learn of the practice of adulteration by the honey producers of America, we must protest against any statement that would seem to convey the idea that they *do* practise adulteration.

—Have you told all your beekeeping neighbors what they have to gain in reading the "Apiculturist?" or have you given them a sample copy?

Every effort that you make to increase the circulation of the "Apiculturist" will tend to improve the honey market and assist you individually in making a success of apiculture. We are hard at work gleaning from every known source all the valuable information possible and you cannot afford to lose one opportunity to increase the circulation of our Journal. Our offers are more than liberal and we are only too pleased to send you such sample copies, circulars, etc., as may assist you in obtaining subscriptions.

If you wish to help us, thus helping yourselves, let us hear from you at once.

—We have just received from Mr. Frank Cheshire, the first four parts of his new work entitled *Bees and Beekeeping* and we are so pleased with it that we heartily endorse Prof. Hasbrouck's review given in our Dec. No. Mr. Arthur Todd, of Germantown, Phila., Pa., is Mr. Cheshire's agent, and will answer all questions regarding prices, etc.

No apiarist can possibly afford to do without it. Next month we hope to give our readers a review of it.

—As some of our old subscribers have not renewed their subscriptions we shall send them the January number, and we trust that if they do not wish to continue, they will drop us a postal card to that effect. We take this course as so many of our readers wish us to continue their subscriptions until otherwise ordered.

CONVENTION NOTES.[1]

THE NORTH AMERICAN CONVENTION.

The sixteenth annual convention of the American Beekeepers' Society met at Detroit, Mich., on Tuesday, Dec. 8, at 10 A. M., President L. C. Root in the chair.

Quite a large number of beekeepers were present, representing ten of the States and Canada. As usual, general enthusiasm prevailed.

The Rev. L. L. Langstroth opened the convention with an impressive invocation, after which the membership roll was called. Six ex-presidents of the society were present.

The treasurer reported $48.90 in the treasury, and it was decided to omit the reading of the secretary's report of the last meeting.

Mr. A. F. Manum, Vice President for Vermont, reported the honey crop of that state, for the present season, to be 160 tons.

Mr. W. E. Clark reported for New York, about a two-thirds crop.

Mr. Wm. G. Gibbons, Vice President for Delaware, in his report, says:

The year 1885 has been an exceedingly unpropitious one for beekeepers in this part of the country. The warm weather which usually sets in by April 10 was procrastinated until near the beginning of May, and during both April and May cold rain storms were frequent. The result was that the bees got to work fifteen days later than usual. The white clover, which

[1] We have to thank Messrs. Thos. G. Newman and R. F. Holterman for the reports from which these have been taken.

is in this section the best and almost the only bee pasturage, did not seem to be well supplied with nectar, and the season of its bloom was exceptionally short; consequently the colonies gathered a very small supply of surplus honey, and few swarms issued. Generally, the colonies are in good condition for entering upon the coming winter, and seem to be healthy.

Mr. Arthur Todd, Vice President for Pennsylvania, made the following report for the year 1885.

The winter of 1884–5 proved disastrous to many beekeepers in the state of Pennsylvania, and as regards a honey harvest—practically there was none. The fall crop of honey has likewise been a complete failure, and bees go into winter quarters in bad condition, unless fed on sugar syrup. I have taken pains during my business journeys and in my correspondence, to learn the actual results of beekeeping this year in this state for many a mile distant from Philadelphia, and I think that the word "disastrous" will best express the general feeling.

I regret that I am unable to meet the brethren in convention assembled; it is a great disappointment to me.

Mr. H. F. Hunt, Vice-President for Quebec, Canada, reported as follows:

The knowledge of bee-culture, by the improved methods of manipulation, is still in its extreme infancy in Quebec, and has only within the past few years begun to be disseminated among the people, the southern and southwestern parts having more beekeepers than the other parts. There are numerous box-hive beekeepers throughout the country, who still take their honey by the old-fashioned method of "brimstoning"—a method which I hope is now on its "last legs." My report, therefore, will not bear comparison with that of our sister Province—Ontario—but I hope that in the not far distant future, we shall be able to make as good a showing. The success attending the labors of beekeepers in Ontario, will act as a stimulus to those in Quebec.

In common with the rest of the North American continent, the losses last winter were heavy, but beekeepers, as a rule, have not been much discouraged, and are hoping for better success this winter. Our losses were not so heavy as those farther south, which I attribute to our being compelled to protect the bees well, on account of the severe cold which once or twice every winter touches 30° below zero, the average being 5° to 10° above.

I have not received as many responses as I could wish, to my request for reports, but I generalize from what I did receive. The past season has been a very poor one indeed, owing to the extraordinary cold season, which seriously curtailed brood-rearing and the secretion of nectar, in some parts of the Province, notably in the vicinity of Lake Megantic, and in the county of Beance. The spring was so dry that certain crops had to be replanted, and would, no doubt, have acted unfavorably to the secretion of nectar in the white clover. Some honey was gathered from basswood, which yields more freely to the south than to the north of the St. Lawrence. Fall flowers also have not given much, and many colonies have had to be fed for winter.

Mr. S. T. Pettit, Vice-President for Ontario, Canada, made the following report:

Beekeeping in Ontario, for the last year, has not been of the most flattering kind. During the last winter and spring about 75 per cent. of our bees perished. This great loss was brought about by three principal factors, viz.: poor stores, long-continued cold in both winter and spring, and inexperience.

Generally speaking, those of long experience in apiculture, who have given much time, study, painstaking and exacting care—in a word, those who make beekeeping a specialty, and who are adapted to the business, sustained comparatively little loss; hence it is plain that this great loss fell principally upon those who, as a rule, neglected some other business to enjoy an immense amount of pleasure and grow suddenly rich by "keeping bees." The large amount of dead, filthy honey thrown upon the market the past spring has done no little harm to the pursuit. Interested parties are constantly promulgating the idea that everybody should keep bees, which results in no inconsiderable loss to the country.

Beside the indirect loss by diverting the minds of many from their legitimate calling, I believe a fair calculation would show the startling fact that every pound of honey produced in Ontario for the last six years has cost the producers, on an average, not less than twenty-five cents per pound.

The teaching that everybody should do everything for himself is a retrograde movement, undermining the best manufacturing, producing, carrying and commercial interests, and tends to semi-barbarism; no matter how per-

sistently or plausibly put, "the trail of the serpent is over it all;" "every man to his trade" is a noble motto, and brings "the greatest possible good to the greatest possible number."

The season was a poor one; the amount of honey taken being about fifty per cent below the average. The weather was too cold and wet with occasional hot spells. The principal honey-producing flowers were abundant, but the elements failed to get into the proper humor to inspire them with their natural love for the secretion of the delicate, sparkling sweets, and the friendly visits of the honey-bee. In spite of all this, some of the short crop of 1884 is yet on the markets; but we shall have a clean market for 1886.

There are several practices that militate against the true progress of apiculture in Ontario, besides those already referred to:

1. Extracting green or unripe honey. It is impossible by human art or skill to impart that exquisitely fine, finished flavor that the bees give it when left with them until it is capped.

2. The practice of feeding sugar either for stimulating or wintering purposes. It is very difficult to disabuse the public mind. They know that we feed sugar, and they seem determined to cherish the belief that, in some way or other, it gets into the honey. If we all fed honey instead of sugar, a less quantity would be thrown upon the markets, and a correspondingly higher price would be obtained, besides inspiring confidence in the purity of our honey.

3. Small beekeepers demoralize our markets sadly, and give a good deal of trouble by allowing their bees to be robbed.

4. And last, but not least, I fear the most of us will have to plead guilty to the charge of painting the bright side of beekeeping too bright, while we keep the dark side obscurely in the dark; in fact it is much easier to show up the bright side than the dark side—it seems to loom up so easily.

In conclusion, I desire to say, that the practice of exhibiting granulated honey in glass, at our Expositions, is doing good service by way of an educator; both dealers and consumers begin now to regard granulation as a proof of purity.

After the enrolling of new members Mr. Langstroth made a few appropriate remarks.

Pres. Root appointed the following committees:

On Finance.—G. M. Doolittle, W. F. Clarke and Prof. A. J. Cook.

On Statistics.—Thos. G. Newman, D. A. Jones and Silas M. Locke.

On Resolutions.—Prof. A. J. Cook, W. F. Clarke and R. L. Taylor.

On Exhibits.—Dr. A. B. Mason, J. B. Hall and G. M. Doolittle.

Thereupon the meeting adjourned until 2 p. m.

AFTERNOON SESSION.

Pres. Root called the meeting to order at 2 p. m., and announced that the first business would be the address of welcome by Edwin Willetts, Esq., President of the Michigan Agricultural College. President Willetts, on arising was greeted with enthusiastic applause. His address was as follows:

MR. PRESIDENT, LADIES AND GENTLEMEN:—It becomes my duty, and it is a pleasure, to welcome you to the State of Michigan. I know of no reason why I should be asked to do so, save, perhaps, because for fifty years I have been a citizen of the State, and at present represent the Michigan Agricultural College, which institution makes a specialty in bee culture and instruction in the habits and propagation of bees.

We have those present who can more fitly represent that feature of the institution than myself, but neither they nor any one else can welcome you to our state with a more hearty greeting than can I. We are glad to see you in our midst. There is a growing interest here in the industry that you represent to-day. Michigan easily ranks high in the production of honey. The breezes are tempered by our inland seas, and our soil is generous in foliage and flowers. We are strangers to extreme droughts and pestilential moisture. We are not in the path of the blizzard or the tornado. Nearly every foot of land in our southern peninsula takes kindly to the ploughshare, and rejoices in a fertility that responds heartily to the demands of husbandman. We are a busy people, in busy homes, and we harmonize easily with the "busy bee." We understand each other—we and the bees—and each pursue our vocations without antagonism. Hence there is room for both, without hostility and mutual profit; and all we need is the dissemination of such information as you can give, to lead us to a more general pursuit of your industry.

We shall expect an impulse in that

direction as the result of your deliberations. You represent no mean vocation. Ever since and before Jacob sent as a present to propitiate the hard master in Egypt, a little balm, and a little honey, spices and myrrh; ever since Columella wrote, and Virgil and Horace sang, the sweet elixir has tempted the palate of mankind. There is no substitute for it; the analysis of the chemist is unable to produce it; man cannot make it, or grow it, or rectify it, and till Millenium's dawn, it will be nectar to men and gods.

Yours is no insignificant industry. You represent 3,000,000 colonies of bees, with an annual product of surplus honey of 100,000,000 pounds. Under the impulse of this and kindred associations the product is increasing annually. The cheap sugar of to-day has no perceptible influence upon the demand or the price of the commodity. As the country increases in wealth and luxury, the demand grows with its growth, and increases with the means to gratify the appetite. The best minds in the field of science have contributed to the more successful promotion of the industry. Aristotle, Virgil, Columella, Pliny, Swammerdam, Ray, Latreille, and a host of others, ancient and modern—not to forget Langstroth, Cook, Quinby, Root, and others of our day—have studied, observed, experimented and written about bees and their habits, till we know how best to rear them, and how best to utilize their harvest of sweetness; so that to use the words of a learned judge of one of our Courts, who said, "In modern days the bee has become almost as completely domesticated as the ox or the cow. Its habits and its instincts have been studied, so that it can be controlled with nearly as much certainty as any of the domestic animals."

You have almost taken it out of the class *ferœ naturœ*. The propensity to mischief has been so diminished, that serious injury is almost as rare from a bee as from the horse, and far less than from the dog. The Courts take kindly to the bee. They look with favor upon animals or insects that are useful to man; with disfavor upon such as are purely noxious or useless. There is no question of the utility of bees. I note this fact, as I observe a little apprehension among apiarists, about the attitude of Courts occasionally, and the fear that there may grow up some legal limitation or liability that shall destroy your industry. Bees were here before Courts or juries, and they have the right of way, and will keep it so long as their product is desirable. The recent case that has caused some apprehension will be found, I hope, to be based upon an utter misconception of the bee and its habits. It will be found, I have no doubt, that a sound grape is absolutely armor-proof to the attack of the bee. It is only when the armor is broken that the attack is made. A grape with a broken shell is practically valueless—worthless, except for the wine-press; and for the one, I frankly say, gentlemen, that as between the wine-press and the bee—as between alcohol and honey—I am for the bee and for the honey, and I believe the Courts will give the bee the case.

But, gentlemen, I am not here to keep you from your deliberations. I again welcome you to Michigan, and trust that your stay with us shall be so pleasant that your recollections of it shall be a life-long joy.

President Root said that he strongly advocated the location of this meeting at Detroit, and he was fully satisfied that there was wisdom in the choice. He had always been much interested in Michigan beekeepers and was very glad to meet with so many of them here. The matter of defence of our rights as beekeepers had been mentioned by President Willetts and he was much in favor of unitedly defending our rights. As Mr. T. G. Newman was general manager of the Beekeepers' Union, an organization created for this purpose, he would call upon Mr. Newman to make a statement concerning what had been done and what was expected to be done in the future by the organization of which he was manager.

Mr. T. G. Newman then delivered an address on the National Beekeepers' Union, from which we have taken the following notes:

Last June, Mr. S. I. Freeborn, an extensive apiarist of Wisconsin, was sued by a neighbor, who kept a flock of sheep, for alleged annoyance to his sheep by trespassing bees.

It was understood that this was to be a "test case," and if the plaintiff succeeded in obtaining a verdict in his favor, either by the ignorance or prejudice of a jury, other beekeepers would be likely to be sued to recover damages done to pastures, vineyards and gardens by bees; and anyone owning a few square rods of land, devoted to almost any purpose, may try to

recover damages from all the owners of bees in the vicinity.

Mr. James Heddon suggested the formation of a Beekeepers' Union in defence of their rights and to protect their interests. Such a union was formed, and officers elected as follows:

President—James Heddon.
Five Vice Presidents—G. M. Doolittle, G. W. Demaree, A. I. Root, Prof. A. J. Cook, Dr. C. C. Miller.
Manager, Secretary and Treasurer—T. G. Newman.

The officers were made an Advisory Board, with full power to act.

This Union had employed attorneys and obtained such other assistance as was deemed necessary, and when the case came up the Judge decided that there were no laws nor rulings upon which he could instruct a jury; hence the case was dismissed.

Other cases were cited where the Union had rendered valuable assistance and still others where it would probably be able to do good work in behalf of the interests of the beekeepers. It was shown that California apiarists were being persecuted and and that unjustly.

Mr. Newman urged the beekeepers to join hands with the Union and by becoming members assist in deciding these battles for the right.

This was followed by discussion, the majority of beekeepers being in favor of using pacific measures whenever possible, resorting to law only as a last resort; after which Mr. W. F. Clarke offered the following resolution which was adopted:

Resolved, That a committee of seven be appointed to consider and report upon the best methods of protecting the interests of beekeeping from legal attack prompted by ignorance.

The resolution passed and the committee was appointed as follows: W. F. Clarke, T. G. Newman, W. E. Clark, James Heddon, C. F. Muth, S. T. Pettitt, and Prof. A. J. Cook.

The President then delivered his annual address which we have not given as Mr. L. C. Root wishes to make some alterations when it will be given in the "Apiculturist".

After reading of the address the following discussion took place.

Mr. C. F. Muth remarked that in New York they principally demanded honey in glassed sections or in paper boxes. In the west, such are unsalable. We, here, require it in unglassed sections with the crates glassed.

Mr. C. R. Isham said that our honey-producers can sell all their honey in glassed sections, and it is desirable to do so in order to preserve its beauty and purity.

Mr. Thompson said that he wrote to New York asking for a bid for best glassed honey, and he was offered only 10 cents per pound for it delivered in New York.

Mr. Hall proposed a vote of thanks to Pres. Root for his able address.

Mr. G. M. Doolittle then read an essay on

THE PRODUCTION OF COMB HONEY.

He said that there were four things important in the production of comb honey: First, a good queen; second, the getting of the bees at the right time to secure the harvest; third, a skilful apiarist; and fourth, the right kind of a hive. Remarks were made on each of these points, and Mr. D. said that we could divide and subdivide these four heads, especially the last three, yet the fundamental principles would not be changed.

The discussion on comb foundation took a general and rather desultory course. Mr. J. B. Hall was asked to state his method, and confined himself to his experience with comb foundation.

Rev. W. F. Clarke said that Mr. Doolittle's essay was professedly on the production of comb honey, but what he said was just as applicable to the production of extracted honey. A good queen, plenty of bees to gather in the honey harvest, a skilful apiarist, and a good hive—were not these just as needful for the production of extracted as comb honey? What we want is the points of a skilful apiarist required to get large crops of comb honey. We want to know how to do it. Our most successful producers of comb honey rather tell us "how not to do it." They appear not to like to explain things. They take Burns' advice to his friend Andrew:

"Still keep a secret in your breast
Ye never tell to any."

For several years at these conventions he had tried to get Mr. Hall to explain how he gets such large crops of splendid comb honey, but he had never done it.

Mr. Hall: "I should have to make the man."

Mr. Clarke: "Well, here he is; take the raw material and make the man."

"That's just what I want."

Much amusement and bantering of Messrs. Doolittle and Hall to explain the *how*, but the wily veterans did not come to the scratch.

Amid much laughter the subject was laid on the table, and the next order of the day taken up; viz.: an essay by Mr. C. P. Dadant, on

EXTRACTED HONEY.

Comb honey is nice, but it is a fancy article, and is too costly for the general public who want an article not costing more than sugar, with which it competes, and if honey can be supplied as cheaply as sugar, it will, to a large extent, supersede it. In their experience, their sales had largely increased, and the home market now readily consumes all their crop. Extracting honey checks swarming, without a doubt. It enables the apiarist to take care of a larger number of colonies. A larger quantity of honey can be obtained, and much outlay for combs, crates and boxes is saved. Mr. Dadant considered it a mistake to suppose that there is an over-production of honey. It is only beginning to be considered a staple. When honey is as common on the tables of the farmer, and even laborer, as sugar, and when it is found as common by the keg and barrel in wholesale stores as sugar, then only shall we produce as much honey as the country can use. The revolution in beekeeping of which Father Langstroth speaks has come into effect, but beekeepers are only beginning to find out all the advantages and all the growth which the bee-business must derive from the invention.

Dr. Mason described his method of getting extracted honey, but complained that he could not get more than 65 pounds per colony. He was asked how many combs he used, and replied, "eight."

Mr. C. F. Muth could not comprehend how the Doctor could manage with so few frames. He wanted at least ten frames for the brood-nest, and then another story for extracting. Even his bees, kept on the house-top in the city of Cincinnati, had given him averages double and even treble what Dr. Mason had obtained, and from hives in the country where they had not so far to fly, he got far more honey.

Mr. W. E. Clark said that the President had been the most successful producer of extracted honey in the east, and he would call on him to explain his methods.

Pres. Root, in response, said that it was perfectly true, as Mr. Clark had said, that Mr. Doolittle's requisites for producing comb honey were just as applicable to the production of extracted honey. A good queen, for example, was just as necessary for the one as the other. In both cases wise manipulation was needed, and it takes a large amount of study to know what is wise manipulation. Certainly we must have large colonies of bees to gather the honey, then we must extract it at the time when it can be done to the best advantage and with the least hindrance to the bees. It was hard to lay down specific rules—every beekeeper must be a law to himself, and find out the methods best adapted to his own locality. Experience must be bought by practice, and at a considerable expense; he only hoped that it would not cost others as much as it had cost him. Pres. Root gave the stereotyped directions for the production of extracted honey, but said that these were subject to modification in individual cases.

Mr. S. T. Pettit gave his experience in producing extracted honey. He had missed it by not leaving the honey in the hive long enough to ripen. One season his honey was all of an inferior quality, owing to this cause. He did not believe that we could ripen the honey as well as the bees themselves do it. He said that we should have at least one-third of the honey capped before extracting, and he believed it was better if all was capped over.

Rev. L. L. Langstroth did not know that he could add much to the ocean of intelligence that was tiding all around, but he wished to say a word or two. He believed there were many things that the bees could do—certain things better than we can—and ripening honey was one of them. There was too much artificial work in beekeeping. One beekeeper had invented nippers to pull dead bees out of the cells, but live bees would do it better.

Dr. Mason said that the "big-bugs" of the Convention had been poking fun at him for getting only sixty-five pounds of honey per colony, but they would find it impossible to get an average of three hundred pounds in his locality—a city on one side and a wilderness on the other. Small as his average yield was, it was larger than that of any of his neighbors. He wished that his critics would show him how to produce three hundred pounds per colony, but the trouble was, as Mr. Clarke said, they did not care to disclose their secrets.

Rev. W. F. Clarke wished to ask if formic acid in honey was not the element which gave it its keeping quali-

ities. He put the question to Prof. Cook. For his own part, he believed that the formic acid was added by the bees in the capping process, which was carried on mainly by the use of their tails—the sting—being the last polishing tool. It was because the formic acid was thus added that honey must be one-third capped to be good, and all capped to be first-rate.

Prof. Cook thought that no one knew how or when the formic acid was added. He was also of the opinion that too much stress was laid on the matter of taste. Few could discriminate as thoroughly as had been suggested.

The Convention then adjourned.

EVENING SESSION.

The meeting was called to order at 8 p. m., by Pres. Root. An essay was read as follows, by Mr. R. F. Holterman, of Brantford, Ont., on the

CARE OF HONEY FOR MARKET.

I bring this subject before you, fully aware that it is not of as great importance as many others, being indirectly connected with the production of honey; but on that account it has perhaps not received that public attention which it merits. It is our duty, when blessed with the means to procure a crop of honey, that we should acquaint not only ourselves but every beekeeper with what will secure to us the article in the highest state of perfection, and place it thus in the consumers' hands. Have we, as a body, endeavored to do so? Looking at it from a business standpoint, past experience has taught us that in order to realize the best results financially, from any article extensively produced, it is necessary not only to better our own but we must better that of the entire land.

Let us imagine the land completely destitute of vegetation. Here is a heavy soil, in the distance is a sandy one, and between, all grades of soil. Here is a hill, there a swamp, and at other distances, intermediate elevations. Now, could our eye stretch from north to south within the honey-producing area, and were this area to be decked with our present vegetation, which of the aforenamed conditions would influence the quality of honey? The heavy soil would give us a richer honey than the lighter; the more extremes of cold climate would give a better quality than the more equable. Would the high and the low land influence it? We know that honey from every species of flower has its peculiar flavor, no matter how indistinct, and that the season, its winds, temperature, and degrees of moisture influence not only the quantity, but the quality of our honey.

The progress beekeeping has made, and so many making a specialty of it, have enabled us in a measure to conduct ourselves accordingly; but to the ordinary beekeeper most of the previously named conditions cannot be controlled. But how much lies within our power!

One of the first questions would be, when shall we extract? Shall we extract before or after the honey is sealed? What are the advantages and disadvantages of the two systems? If, entirely sealed, we require to uncap a large surface, the bees must, with the ordinary appliances, be cramped for store-room, the brood-nest becomes contracted, not alone meaning loss of time until extracted, but many think they do not regain their old energy for the remainder of the season. The advantages would be, honey called ripe, subject to the before-named conditions.

When is honey ripe? With the system of extracting when the honey is unsealed, there is no uncapping and bees have plenty of store-room, but the quality is inferior; and right here a friend would step in with his ripening can. But we have made no light mistake; for, in the past, our honey has been handled too much, as if it could lose nothing by having it come in contact with the air. What imparts that peculiar aroma to honey, and gives each kind of honey a distinct flavor? Is it not largely a volatile oil? Do we not know it is being distilled from every flower as we pass through a clover field in blossom? And, in evaporating and otherwise coming in contact with the air, we lose this.

Many find that to extract honey when one-third capped answers well; the honey to be put into deep tanks or barrels holding about 600 pounds each, and left for a week. This causes the light, thin honey to rise to the top—generally it is not ten per cent., and this can be disposed of a little cheaper —and the rich, ripe honey remains. One week more of exposure is ample for clover, and it becomes sweet without the flavor: basswood longer, according to the taste. Thistle honey has a very distinct odor and taste, but it is very volatile, and requires but little exposure. If we handled our extracted honey thus, would it not take the place of comb honey more?

What is meant when consumers say that they miss a peculiar richness in extracted honey, which the comb will give them? Is it all fancy? How many beekeepers have greeted you with the remark, after tasting your basswood honey, "Ah, that is pure honey." How many have thought, after tasting the long-exposed clover honey, "That is sugar syrup." The former loses its flavor less readily; the latter more readily.

Has our comb honey been handled with proper care? Should it not always be kept not only dry, but at a temperature that the delicate scales of wax—cell caps—never crack from too low a temperature? Does honey ferment in the cells and crack the wax, or does the cell break, permit access to moisture and atmosphere, and that *cause* the honey to ferment?

Indianapolis, Ind., was selected as the next place of meeting, and it was voted that St. Louis be in contemplation for the following year, and the following officers were duly elected:

PRESIDENT—H. D. Cutting, Clinton, Mich.
RECORDING SECRETARY—Frank L. Dougherty, Indianapolis, Ind.
CORRESPONDING SECRETARY—Mrs. Cass Robbins, Indianapolis, Ind.
TREASURER—C. F. Muth, Cincinnati, O.
VICE-PRESIDENTS:
Alabama—Nelson Perkins, Princeton.
Arkansas—George B. Peters, Peters.
Arizona—Jas. H. Brown, Prescott.
British Columbia—U. Spears, New Westminster.
California—R. Wilkin, San Buenaventura.
Colorado—Philip Reardon, Jamestown.
Connecticut—H. L. Jeffrey, Washington Depot.
District of Columbia—Rev. J. A. Buck, Washington.
Dakota—J. H. Townley, Ashton.
Delaware—Geo. Remington, Wilmington.
Florida—W. S. Hart, Hawk's Park.
Georgia—Dr. J. P. H. Brown, Augusta.
Illinois—Mrs. L. Harrison, Peoria.
Indiana—J. Scholl, Indianapolis.
Iowa—J. M. Shuck, Des Moines.
Kansas—Chas. Smith, Marysville.
Kentucky—J. M. Egbert, Salvisa.
Louisiana—P. L. Viallon, Bayou Gonla.
Maine—J. B. Mason, Mechanic Falls.
Manitoba—Hon. J. H. Wallbridge, Winnipeg.
Massachusetts—S. M. Locke, Wenham.
Michigan—Miss Lucy Wilkins, Farwell.
Missouri—E. M. Hayhurst, Kansas City.
Mississippi—Dr. O. M. Blanton, Greenville.
Minnesota—C. F. Greening, Grand Meadow.
Maryland—Dr. W. G. Phelps, Galena.
Montana—Chas. Pruce, Wickes.
Nebraska—T. L. Von Dorn, Omaha.
Nevada—A. A. Leeper, Carson City.
New Jersey—E. Terryberry, Highbridge.
New York—Ira Barber, DeKalb Junction.
North Carolina—H. H. Watson, Sladesville.
Nova Scotia—C. T. Jones, Waterville.
New Hampshire—M. Harle, Keno.
Ohio—A. I. Root, Medina.
Ontario—J. B. Hall, Woodstock.
Pennsylvania—Arthur Todd, Germantown.
Prince Edw. Island—Jas. Gourlie, Summerside.
Quebec—H. F. Hunt, Quebec.
Rhode Island—Wm. J. Tracy, Burrillville.
South Carolina—S. C. Boylston, Charleston.
Tennessee—W. P. Henderson, Murfreesboro.
Texas—W. H. Andrews, McKinney.
Utah—John Morgan, Salt Lake City.
Virginia—J. W. Porter, Charlottesville.
Vermont—A. E. Manum, Bristol.
West Virginia—A. W. Cheney, Kanawha Falls.
Wisconsin—Christopher Grimm, Jefferson.
Wyoming—James Fields, Fort Laramie.
Washington—H. A. Marsh, Fidalgo.

[*To be continued.*][1]

A meeting of the beekeepers in Somerset County, Me., was held in the month of August, 1885, and Mr. W. H. Greeley of Clinton reports:

I began three years ago with one nucleus colony and now have forty swarms and have not lost a swarm during the three winters. He says, my honey crop [this year is rising 2500 pounds in one-pound sections.

How is that for Maine?

W. H. WATSON.

Waterville, Maine.

The next annual meeting of the Maine Beekeepers' Association will be held at Skowhegan, Maine, Jan. 19–20–21, 1886. The Maine Central R. R. will sell tickets at one fare for the round trip. The Grank Trunk will sell tickets at the same rate to Lewiston.

Beekeepers everywhere are cordially invited to be present.

J. B. MASON, *President*,
WM. HOYT, *Secretary*.

Ripley, Me., Dec. 7, 1885.

The sixth annual meeting of the Cortland Union Beekeepers' Association will be held Jan. 12, 1886, at Cortland, in Union Hall, at ten o'clock, A. M.

It is hoped that all interested in apiculture will make an extra effort to be in attendance at this meeting, also to be present promptly at the time appointed so that there need be no time lost.

Those unable to attend the meeting are requested to send a report of their apiary from May 1, 1885 to Dec. 1, 1885, to the secretary.

M. H. FARBANKS, *Pres.*

W. H. BEACH, *Secy.*
Cortland, N. Y.

[1] We have been obliged to leave out a portion of the reports, but will give them hereafter and the questions and answers for this number will appear next month.

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SPECIAL NOTICE.

The Apiculturist will be sent three months to any address for 25 cts., six months for 50 cts. or one year for $1.

To each new subscriber and to those who renew their subscriptions promptly, we will send likenesses of Rev. L. L. Langstroth and the late Moses Quinby.

TEMPERATURE, A FACTOR IN BEEKEEPING.

BY S. CORNEIL.

"ALL animals, strictly speaking, are warm-blooded." Even amphibia and fishes have a temperature from two to four degrees higher than that of the element in which they live. For convenience the higher animals, where temperature is *constant*, and consequently independent of the temperature of the surrounding medium, are called warm-blooded, while those whose temperature is *variable*, changing with that of the surrounding medium, are classed as cold-blooded animals. "Like all insects, bees are cold-blooded." They seem, however, to occupy an intermediate place between these two classes. Their temperature, when they are clustered, and in repose, changes with that of the surrounding medium, only to a limited extent. When the temperature of the cluster falls to a point, not definitely ascertained so far as the writer is aware, the bees are roused to activity, and by increased respiration, generate heat to prevent the temperature from falling lower. On the other hand, when brood rearing is actively carried on, the heat of the brood nest is so nearly constant, and so nearly independent of that of the outside air, that, for the time being, bees almost meet the requirements, entitling them to be classed as warm-blooded animals.

Since the normal temperature of the bee varies, ranging from 54° to 100°, and since "warmth is the chief necessity of bees and their brood," and since temperature is the measure of their strength," it is important that the beekeeper should be familiar with the temperatures most suitable to the varied conditions of his stocks, at all seasons. On this matter some of the most recent works on bee culture are almost silent, and the information to be gathered from

our current bee literature is meagre indeed. From the limited sources within my reach, I have made the following list, which it is to be hoped will be supplemented from other quarters till it covers the whole ground.

32°. It is said frozen bees may be resuscitated provided they have not remained frozen for more than forty-eight hours, but Dr. Dzierzon says, even if they do recover their vitality they do not regain their former strength.

50°. Dr. Dzierzon says in their most quiescent state, 50° is about the temperature of the air surrounding the cluster. This has quite recently been verified by careful experiment made by Dr. G. L. Tinker of New Philadelphia, O.

54°. When out of the cluster, bees become chilled in a temperature below 54°. This is the minimum for locomotion.

59° to 66° is the range of temperature in the interior of the cluster when the bees are in their most quiet state, according to Dr. Dzierzon. At this temperature he says, brood will not thrive and the consumption of honey, in a tolerably populous colony, is about one pound per month. Huber, Swammerdam and others put the temperature of the cluster at 86° to 88°. I had, on one occasion, an opportunity of pushing the cylindrical bulb of a thermometer into a large cluster, formed beneath the frames of a hive in the cellar, the temperature of the cellar at the time being about 40°. I took fifteen readings extending over eight days, and I found the average was 69°.

61°. This is the minimum temperature in the shade when it may be said to be safe for bees to fly.

70°. This is about the best temperature for transferring, because it is neither cold enough to chill the brood, nor warm enough to make the combs too soft.

80.° This is the minimum temperature in the brood nest where brood can be successfully raised. Huber says the usual temperature of hives is from 95° to 97°, and John Huber says from 90° to 100° is necessary to hatch eggs and rear larvæ. I think it probable this range is too high. Newport found the temperature of a larva cell 77½° in a nest of humble bees, while that of a nymph with nurse bees upon it, was 92°, the temperature of the outside atmosphere being 72½°.

I have not been able to find, as the result of experiment, the temperature at which comb building can be carried on to the best advantage, but I presume it is about the same as that required for brood rearing. Last spring some of my stocks built full sheets of comb in upper stories between the 6th and 21st of May, the mean temperature of the outside air for that period being 54°. Populous stocks, in single walled hives, covered with quilts of wool, and abundant hard maple bloom, were the principal attendant conditions.

90°. From some very accurate experiments made by a writer in the British Bee Journal, he inferred that 90° is the maximum temperature of

the brood nest which can be borne without fanning at the entrance. From the same experiments it was inferred that when the temperature of the brood nest exceeds 90°, with an outside temperature below 60°, and bees fanning at the entrance, the brood nest may be expanded with safety. This observer found that blowing smoke into the entrance of a hive, in which he had his thermometer placed, had the effect of lowering the temperature of the brood nest, because the bees expelled the smoke by fanning and with it the warm air which was replaced by colder air. He also states that he usually found the temperature lower the second day after manipulation and artificial excitement than previous to being examined, and that he has proved it possible to find a hive 10° lower after manipulation and that temperature not to be regained in less than a week. From these observations it will be seen that to secure the best results in building up before the honey harvest, the less the smoker is used, and the less the hives are opened the better.

100°. At this temperature in the brood nest, the bees become uncomfortable and prepare for swarming.

Lindsay, Dec. 14, 1885.

Never feed bees by putting honey or syrup in dishes and setting them outside the hives. The beekeeper who does so will have reason to regret it. Use a good feeder inside the hive.

SECTION BOXES.

By Dr. G. L. Tinker.

Now is the time for beekeepers to lay their plans and order supplies for another year. What kind of section, the dovetailed, the one-piece, the two-piece or the section to nail, is preferable? what size and width and what kind of timber are best? are questions that are now in order. One more may be added: Is it best to order a nice, smooth sawed, accurately dovetailed and accurately cut section at a slight advance in cost on a thousand, or shall we invest in the rough sawed, inaccurately made, unsightly section at a lower figure? We will try to answer these questions remembering that opinions based upon our experience and observation may not be shared in by all.

Our preference is decidedly for the dovetailed section. Even if we used basswood instead of the white poplar, we should want our sections dovetailed. We prefer them to the one- or two-piece because they present a nicer appearance, are stronger when properly made, and have openings the whole width of the section for the bees to enter. A dovetailed section to be strong should be cut a little heavier than is usual. $\frac{9}{64}$ of an inch for the thickness of each of the sides is better than $\frac{1}{8}$, or $\frac{1}{8}$ of an inch scant. The dovetailing is also done better with saws $\frac{9}{64}$ of an inch thick than with thinner saws unless the section be very narrow.

The size and width beekeepers have differed upon more than on anything else. The market, however,

has settled upon a small section, one holding a pound or a fraction less. These sections also command a higher price and are coming more largely into use every year. The width of sections is of less concern to the consumer than to the producer. Beyond question more comb-honey can be secured in the narrow sections than in the wide, and if we are to dispense with separators, which every beekeeper should learn to do, then the narrow sections are indispensable. $1\frac{1}{2}$ inches is the width most commonly agreed upon, but anything less than $1\frac{3}{8}$ inches wide is undesirable. In shape we prefer a square section and, if only $1\frac{1}{2}$ inches wide it should not be larger than $4\frac{1}{2}$ inches square. The $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{2}$ is much used but it holds only twelve ounces on the average. Some seem to favor a section holding exactly a pound on the average but, as filled sections vary as much as two or three ounces, it is only fair to retail by the pound. Hence, the matter of one to three ounces less than a pound is of little account. Dealers find it an objection in retailing sections that average a full pound in weight, since some of them in that case will overrun a pound by an ounce or two which the customer is apt to think should be included in the purchase at the rate per pound.

Our choice of timber for sections is the white poplar. Possibly if the one and two-piece sections could be made out of it they would be more acceptable, but, as the poplar is too brash to bend without breaking, it cannot be used to make them. It must be either dovetailed, which is preferable, or cut to nail. The white poplar is the whitest and the nicest timber in the world for section boxes, nothing, in fact, could be finer. When properly sawed it has a most beautiful finish; far nicer than could be imparted by the common plane or a planer. Basswood is the timber selected for making the one and two-piece sections on account of the toughness of its fibre. Young trees of rapid growth make sections nearly as white as the poplar; but the greater part of basswood lumber used for making sections is inferior in color.

We have yet to consider quality of workmanship. There are few people who do not have an eye to the beautiful. The exquisite finish and attractive appearance of comb honey are due to a workmanship that man, with all his ingenuity, can never hope to equal. To say that its appearance is marred by placing it in an unsightly package is only drawing it mild. We would advise no one to do it. Let us rather add in every way possible to the "fancy" quality of comb honey so often noted in the market quotations, that an inferior package detracts from this quality and hence the market price, no one can doubt.

It is undeniable that nice and perfectly accurate sections cannot be made as cheaply as rough and inaccurate ones, but we do not consider the narrow margin of difference in cost sufficient to cover the loss in sales on inferior packages, although it appears that many beekeepers act on the presumption that money is saved by investing in them; they seem to forget that a fine package helps to make sales and aids very much in

giving to every beekeeper, who properly labels his honey, a reputation for superior excellence of his product.

Of late years there seems to be a demand for a better quality of beekeepers' supplies generally. Especially have the complaints been numerous on the cheaply made sections. This has been the result of competition among the manufacturers who, in order to furnish a low-priced section, have been compelled to turn out an inferior, and in many cases, an almost worthless article. It seems to me now that it would be salutary if the competition is turned toward superior workmanship, but whether this shall be or not rests wholly with beekeepers. If they demand a poor article dirt cheap they will, no doubt, be accommodated, but if the demand is for the best kind of workmanship on sections at reasonable prices they will just as surely get it.

New Philadelphia, Ohio.

BEE-CULTURE IN TEXAS.

By Mrs. Sallie E. Sherman.

In my last article for the "Apiculturist" I promised in my next to tell you something of my success in bee culture. Well, to begin with, in the fall or winter of 1879, I purchased one colony of bees in a common box hive of Rev. Willis J. King. My little son and myself went after them at night and brought them home in a wheelbarrow; distance about one mile. Had to cross the Salon on a swinging bridge, but we got them home safely and set the hive on a flat rock and let them alone until they swarmed the next spring. In the meantime, however, I had through a friend obtained the address of A. J. King of New York and had sent to him and got directions how to make the American hive, and employed a good workman to make two hives for me of that pattern, cost of each hive, $5.00. I then thought that they were perfect; even had a glass door in the rear so that we could see the bees at work inside the hive. But when they swarmed, such a time as we did have. I had never even helped hive a swarm, had never seen a bee book, didn't even know that there was such a thing as a smoker. You may well imagine I was in a dilemma. Charlie, my little son, was at school a mile away. I was alone and the bees in the top of a tall live-oak. I studied but a moment, then ran to a near neighbor's and sent to town for the best bee-man, who, by the way, was a widower and an expert as it was thought, at the time, for he actually had seen queens and knew them by sight. He soon came and brought another good neighbor along to help. The first thing was to get a ladder, and the next to carry out the dining table and place it under the swarm, then for a sheet and four long sticks to be tied to each corner.

Next, friend A went up the ladder with saw, ax and rope as his implements, so that if he failed to jar the bees in the sheet, he could saw off the limb. Friend C. and I were on top of the table holding the sticks, one in each hand at full arm's length

right over our heads. When the bees were jarred off the limb, friend C let all hold go and took to his heels in double-quick time. So the whole swarm was poured right on top of my head, and became quite angry at such rough treatment. They, however, soon settled at the same place again, so friend A sawed off the limb and finally got them down, not without getting a good many stings, as they were the common native bee, and thoroughly aroused by this time. We still did not succeed in getting them in the hive. The next time they settled on an old stump, and some weeds growing near it. This third trial succeeded, after which friend A called for the camphor and thoroughly washed his hands in it, and also used it copiously about his face and neck. I verily believe that forty bees had stung him but he never grunted. C said that if the whole swarm had stung him he would never have grunted.

In about two weeks, the second swarm issued and was duly hived with a little less trouble than the first, not, however, without the assistance of several neighbors. The latter part of July, 1880, I found that there was honey in all the hives to be taken. So I finally mustered courage sufficient to rob them. With a roll of rags burning, I went to the hives and robbed them in a very bungling way; killed a great many bees, and in return received a great many stings, which were truly very painful as I did not know anything about scraping out the stings and thus relieving the pain. Since that first taking of honey, I have never been out of that God-given, sweet, pure honey.

Before swarming time in 1881, I had sent to New York and bought five ready made new American hives. Had also bought the Bee-keepers' Text Book from which I learned that the Italian bees far surpassed the common native bee, and as I was determined to make bee-keeping a success, I thought of course that I must get some Italians. In the meantime, I had got hold of a copy of "Gleanings in Bee Culture," by A. I. Root of Medina, Ohio, so I sent to him and got one frame of Italians, together with a queen. These were the first Italians I ever saw. I again had to send for friend A to come and hunt out the black queen for me, and, instead of selecting one of the American hives that had the oldest combs in them, I took one of the new hives. All the comb being young and tender, it broke down, and drowned not only the fine queen, but nearly all the bees. Thus my experience was dearly bought. Nothing daunted, I sent and got another queen, and still others. I found them so far superior to the native bee that I was determined and still am determined never to be satisfied until every bee in my yard is pure Italian.

You cannot imagine how delighted I was when I first succeeded in introducing an Italian queen. When the young Italians came out for their first flight, how beautiful they did look. I sent and got another lot of fine ready-made hives, since which time I have got them in the flat, sometimes sending for as many as

one hundred at a time. As my neighbors and friends saw what success was attending my untiring efforts they almost *en masse* took the bee fever, and came to me to get hives for them, for as a gentleman told me last week they think that what I don't know about bees isn't worth knowing. I often tell them that they give me more credit than I deserve. I have taken and read carefully the Beekeepers' Magazine for about four years, and the Weekly Bee Journal for nearly the same length of time. Have read "Alley's Handy Book," on queen-rearing and reared some fine queens by his method for the past two seasons.

The great trouble with me is in getting my queens purely mated, as there are so many native bees all around me. I fear that I have already made this article too long, but must tell you that I have taken two thousand pounds of extracted and four hundred pounds of comb honey this season. Now have fifty-eight colonies all in good condition for winter. I would have taken double that amount if the season this year had been as good as it was last. For the present, adieu.

Salado, Bell Co., Texas.

THAT NEW FRAME!

By Will M. Kellogg.

I READ friend Demaree's article in the January number with much interest. While I agree with him in what he says as to various writers dictating for all climates, I must differ with him a little and still stick to the dogma of only one-sized frame in an apiary, though I do but very little manipulating, but when I. do I want no bother of odd sizes.

But what interested me most of all was that new frame, and I must say that I like that from the very start. Experience is the best teacher, we know. I began with tight top bar frame, and in a hive with tight sides they were an intolerable nuisance, and I changed to the narrow open-topped ones, and was very much better suited. Having to use lumber ⅞ in. thick, or be at greater expense to use wider stuff, I naturally made all my new frames of that width top bar. But I have always been troubled more or less with combs projecting beyond the frame. Having bought some extra stacks, the frames of which were one, or one and one-eighth inch wide, I was forcibly reminded how much finer, and more easily handled were the combs built on such width top bars. Also that less bunches of comb were built between and on top. I have thought, if I ever made any new frames, I would stand the extra expense and use the wider stuff. But before that time came I got to using side opening hives, and some of them like King's Electic, and Hill's Winter Beehive, having wide top bars, I lost my dislike of the latter, and for ease of working I rather prefer them to the narrow open top, since the movable side gives plenty of room for side movement at the few times a year that I want to open the brood nest. Then, too, I find the sections work so much nicer on an even top, and are

so much less stuck with propolis and wax. I would like to ask friend Demaree a question or two. Your new frames having a top bar one and three-eighths wide, the section side pieces being one and three-fourths to two inches, what system do you employ in placing the case of sections on in order to have the slats in each correspond? How many frames have you in use and how long have you tried them? You have formed a dead air space between the brood chamber and the surplus boxes, inveighed against so strongly by wiseacres. Do you find any difference in the bees readily going into surplus boxes in comparison to the old style frame?

Oneida, Ill.

ADJUSTMENT OF SECTIONS AND WIDTH OF HIVE.

By G. W. Demaree.

Dear Editor: Permit me to answer the following questions through the columns of the "Api."

"Why not put the sections crosswise of the brood frames—would it have a tendency to keep the queen from the sections?

What width hive do you use, and how many frames to it? Please answer through the "Apiculturist" and

Oblige respectfully,

Sam. F. McClurg."

The main points in the above questions have been put to me frequently, and are worthy of discussion.

For two seasons I used cases with the sections adjusted at right angles with the brood frames, and I saw no difference as to the results. I tested the matter on a large scale with cases of both kinds. The one with the sections running parallel with the brood frames, and the other with the sections at right angles with the frames, and there was no perceivable difference as to the readiness of the bees to enter the cases, or as to the amount of honey obtained. As to the queen entering the surplus cases, I saw no difference in this respect. In fact I have never been troubled with brood in the sections. It is not always, but it is generally bad management that brings about such results. If sections are placed on a hive at a time when the queen is pressed for room, and when but little honey is being gathered, the queen is very apt to take possession of the surplus apartment. A simple statement of the causes suggests the proper remedy.

My preference for a system that requires the sections to run parallel with the brood frames is based on a question of economy. I believe that it is generally admitted that the proper position for a hive is to level it from side to side, and incline it forward somewhat so as to drain from the entrance any water that may find its way into the hive, and for other reasons well understood by practical apiarists. This position of the hive does not interfere with the straightness of the combs in the sections if they run parallel with the frames, while if the sections are adjusted across the frames the hives must set level from front to rear, as the combs will likely be built out of line. It re-

quires time and labor to change the position of hives, and "time is money" in a large apiary. In other words I prefer the sections to run parallel with the frames because I do not have to change the position of the hives at any time on their account. And this saves time and labor.

The price of honey is on the decline and cheapness of production alone can save the business from collapse, and every little helps.

I have no doubts in my mind but that "locality" will have to settle the question of the size of the hive. In our climate I prefer and use the standard Langstroth hive, which I have modernized so as to make it answer all purposes with the least possible labor. I have been using them fourteen inches wide with ten frames. The number of frames can be diminished if necessary, by the use of division boards.

My section case is made the same size of the top of the brood department, and is simply a shallow upper story just "bee space" deeper than the depth of the section used. They have been fully described in my articles heretofore published. My section cases, and shallow frame cases for extracting are made to set with a square joint on the brood department, and on each other when "tiering them up." I have used the square joint plan for six or seven years, and I could not be induced to use the Simplicity, or any other kind of lock joint, between the departments of my hive.

There are several patents on section cases, some of quite recent date. I have examined most of them, and not a single one of them is worth the paper it is printed on.

No one need be afraid of "infringing."

No man has the right to monopolize, by patent, ideas and mechanical devices common to the rest of mankind.

Christiansburg, Ky.

HOW SHALL I COMMENCE?

By Sereno Edwards Todd.

I LIKE honey, and am exceedingly anxious to keep bees. But I do not know how to commence; and should I begin, I am filled with grave apprehensions, that every effort would terminate in a magnificent failure. I have every thing at my fingers' ends, as it were, in the line of breeding and rearing domestic animals, raising grain and fruits of all kinds. Indeed, I have had such a long practical experience in the management of agricultural, horticultural, pomological and floricultural affairs, that I would not hesitate, for a moment, as to what to do, and how to do it, in any of the branches alluded to. But when I contemplate the honey bee industry, with a view of procuring bees and taking care of them, every faculty of my being seems to recoil and something seems to suggest to me: "Don't do it." I feel as did a young friend of mine, who came to me, and said that he had read every treatise on grapes, that he could find in the book-mar-

kets and in the libraries, and he had accumulated a vast amount of grape knowledge; but did not know what to do with it. He said, he did not know how to prune a vine, and wished me to go and show him. Now, that is my position, exactly. I have a good deal of bee knowledge. But, I do not know how to use it, and how *not* to use it. I cannot take the knowledge I possess about sheep, horses, meat, cattle and poultry, and apply it to the successful management of honey-bees. Honey-bees are very curious and peculiar animals to manage, yet I have no superstitious notions about the successes and failures of bees. Some persons can manage sheep profitably, and very satisfactorily, while others will utterly fail. Now, I can put my finger on the causes of failure, and on the points of success, in rearing and managing sheep. But, when one man succeeds with bees and another fails, I cannot determine what was the cause of failure.

During the past twenty years, I have purchased a hive of bees, and attempted to go into the bee industry, in a small way. I followed the instructions of experts, in the successful management of bees; but, in every instance, after the expiration of two seasons, I had only a weak, feeble and valueless colony, with not honey sufficient to carry them through the winter. So I fed them. But they all died, in spite of every effort to take the best kind of care of them. I never have failed in any other branch of business. But, I do not know how to manage bees successfully; and when I follow instructions, to the letter I have always failed. Who can tell how to succeed?

Orange, N. J.

RED CLOVER QUEENS A HUMBUG.

By John H. Martin.

Those who have for several years been engaged in bee culture find that many new things are brought before the beekeeping fraternity that are liable to mislead and when examined into are found to be a veritable humbug. The well known adage, "old men for counsel and young men for action," holds good in bee culture as well as in other pursuits. Our older and more experienced beekeepers tell us to go slow and weigh well the statements and appliances of all who have a laudable but selfish interest to sell their goods.

For years it has been a well known fact that red clover is rich in the secretion of honey, and could we produce a bee that could reach the honey in the largest red clover tube, who can estimate the great yields of honey that would make the beekeepers happy.

Several queen breeders have now taken advantage of this great want, that has been talked and written about for many years past, and have put upon the market what purports to be queens whose progeny will work freely upon red clover.

Now let us go slow, as the old men say, and closely examine the merits of these queens. While red clover is grown largely as a meadow

crop in all parts of our country, there are but few localities where it is grown especially for seed. And, strange to say, it is in these few isolated localities that we find red clover queens advertised for sale. Let us further examine into this strange coincidence. It is well known that the seed clover is raised as a second especial crop. This second crop is not so full of honey as the first crop, and the heads are much smaller. Now, because my bees work some upon this second crop of dwarfed heads, is it honest for me to advertise in such a manner as to convey the idea that I have bees that will work upon the largest heads of red clover in all localities?

Please also bear this in mind: those who raise so-called red clover queens do not report larger yields than those who are not in possession of them. Neither do we learn from those who have purchased such queens, that their yields have been materially increased from that particular source, when in fact the yield should have been double the ordinary quantity. While the queens so advertised may be excellent in every other way, we most decidedly call red clover queens a humbug.

FOREIGN NOTES.

By Arthur Todd.

The name of Luigi Von Sartori is well known in connection with bee-keeping in Italy. Early in life he became interested in bees, and studied the German language purposely to enable him to read the German bee journals. He adopted movable frames and had them actually in use in Italy when Dzierzon took out his patent in Germany in 1856.

In 1863 Sartori published a work on beekeeping, and this was in 1880 revised and enlarged, and practically rewritten by him and the Cavalier Von Rauschenfels; the Count Barbo, president of the Italian bee society, carefully scrutinizing the text previous to publication to prevent errors creeping in.

I have a copy of this volume, entitled *Apiculture in Italy*, and it is of great service to me for reference and embellished by many drawings.

Sartori's bee farm near Milan became famous both for bar frame hives, and bees. In 1880 he went to Russia and established a large apiary near Moscow for the Earl of Pontonschin. Previously he had established an apiary in Egypt for the Khedive. Sartori travelled Europe and Africa extensively to study the habits of bees and the different races.

The King of Italy decorated him, and so also did the Emperor of Austria, in recognition of his services in the science and practice of that important branch of agriculture termed apiculture. For many years Sartori has been the proprietor of the leading bee journal in Italy entitled *L'Apicoltore*.

Like all foreigners, he was careful and slow in adopting new ideas, and when wax foundation was being extensively used in America it was with difficulty I got him to try some made

on the Root mill I had. I had to send him the foundation on sale or return; and, although he very soon appreciated the value of foundation, I regret to say my efforts in the cause of wax foundation were of the non-paying order, for it proved to be a case of all sale, but no returns.

In my travels in France years ago, I met men who since their boyhood had been in the habit of reversing their hives during the honey flow, and my friend Monsieur Georges De Layens explained to me its advantages as applied to the special region where it is mostly practised, namely, "Gatenais." Mr. Layens, in a letter written me last year, goes so far as to say that the old system practised there cannot, for the results in pounds of honey, be surpassed by modern movable frame hives, but the idea of reversing each individual frame as practised here did not seem to sug itself to Mr. Layens.

The British Bee Journal has reproduced a translation of a French article which so exactly describes the system I think it well for my readers to see it. "The masterpiece of bee-keepers in 'Gatenais' is to have very strong, and populous hives as early as the honey glut takes place.

When the 'Esparcette' (Onobrychis sativa) or (Hydysarum onobrychis) blooms, they turn their hives (straw skeps) upside down, so that the crown stands upon the floor board the open part uppermost. Upon this open place the perforated sheet iron (No. 35) and upon that a second hive already partly built up with empty comb.

The holes of the sheet iron allow only worker bees to pass; it is therefore evident that the bees soon fill, with extra fine honey, the upper hive which has already clean new comb in it, so that they have not much hard work to perform. To prevent the queen leaving the lower hive, and ascending into the upper one, the sheet iron is left about three inches projecting outside the entrance of the two hives. All bees, returning home from the fields laden with honey, ascend into the upper hive and go into the entrance of this hive while those that nurse the brood enter the lower entrance, and the queen feeling quite comfortable in the midst of her young descendants, does not attempt to escape.

As the lower hive has been turned bottom up, all of the cells have now a downward inclination in it, namely, reversed of course, and in these downward turned cells the queen does not deposit any eggs, so that in the shortest time all the bees are gathering which increases the weight of honey stored materially.

When the top hive is filled with honey, which in a good season is possible in a fortnight's time, it is taken away and the lower one returned to its original position; the queen has not deposited any eggs during the time above referred to and this original lower hive has now plenty of empty cells vacant for storing the honey still to be gathered.

It is also evident that, as the season for turning the hives upside down falls during the best time of breeding, the number of bees are very materially reduced. The bee-keepers in Le Gatenais therefore

generally join up to five swarms to get one good strong hive, and these collect a rich harvest from the clover, etc., etc., and the latter out of bloom they are taken first to the buckwheat field, and afterwards to the moors; but these people are always obliged to buy from their neighbors those bees intended for the sulphur pit, to re-stock, and join to their own in autumn, because their numbers have dwindled down during the months of hard work of collecting when they have ceased to increase."

In England certain parties have already been experimenting the Gatenais system, and one gentleman describes how he inverted a straw skep on the verge of swarming (so overflowing was it with bees) placing the queen excluder zinc over, as described, with sections thereon. He had the pleasure soon to see the bees take possession thereof; rapidly cease idling around, and go to work, dropping the swarming idea apparently, for here lates how he took off forty-five pounds of honey in sections and does not speak of any swarm issuing.

A GOOD REPORT FROM THE FAR WEST.

BY JNO. L. GREGG.

I SEND you a short article on apiculture in this part of God's moral vineyard.

I commenced by buying one hive of hybrid Italians, about the 20th day of March, 1884, for which I paid $15. I immediately went to a tin shop and had an extractor made so as to be ready to save all the honey they might make. But my bees were in a one story Langstroth hive, so I went to work and transferred to my own hive, one I had gotten up, some eighteen years since, a two story hive constructed expressly for the extractor. It carries ten frames in each story.

In 1884 from the start of one hive I got fourteen swarms and took fifty gallons or 600 pounds honey. However, I sent to A. I. Root and procured four Syrians or Holyland queens from which I raised a queen for each hive, all of which produced half breeds. I then sold three hives leaving twelve with which I went into winter quarters on their summer stands.

In the spring of 1885, I had twelve hives, three of which had drone-laying queens which had to be killed. I gave each of them a comb of brood from my best hive of pure bloods, from which they raised queens that were purely fertilized and at the same time I commenced to raise queens to replace all those that produced half breed bees.

I now have thirty-six hives pure Holyland bees, and twenty-two one- two- three- and four-framed nuclei which when doubled up will make two more full hives; and I have taken up to date 485 gallons or 5420 pounds of the finest honey I ever saw in any country. How will that do for high? I also have raised during the season 104 queens, which I sold for $1.25 for untested and $2.50 for tested.

We have quite a variety of honey producing plants, namely, the desert currant commences to bloom Feb. 10, and continues till April 1; March 20, a shrub or bush which grows in all our ditches and all swampy grounds, commences to bloom and continues till May the 1st, when the mesquite begins to show its golden spikes or racemes of blossoms and sets the bee wild just like the basswood in the eastern states. It continues in bloom till about the

1st of July, and again about the 1st of August it comes forth the second time in bloom so also the other two plants first named, the former in Oct. and the latter Sept. 1st and continues till Christmas. But Oct. 20 comes what we have dubbed broom sage, but it is not a sage at all, but a shrub or bush, which is almost equal to basswood for honey; also a large variety of wintergreen, and many other minor honey plants too tedious to mention, all of which are independent of fruit blooms. Then we have all varieties of the cactus, every member of which family is a good honey producer. From a single flower of the mammoth cactus I have poured a teaspoonful of nectar or unripe honey.

Tempe, Maricopa Co., Arizona.

HINTS FOR BEGINNERS.

No. IV.

By J. E. Pond, Jr.

A FEW REQUISITES OF A PERFECT HIVE.

To ensure complete success, either to expert or novice, the best hive that can be found is the one thing needful. So great a difference of opinion exists, however, among experts, as to what form of hive is the best, that the novice "is all at sea" in regard to this question of vital importance, and can hardly make a choice without more aid than he can obtain from the books. I need not say a frame hive of some kind is absolutely necessary; for this fact is generally understood "the world over." I do not propose at this time either, to give all the points in regard to the make-up of the best hive, but will give my individual opinion on the subject, and a few reasons for that opinion.

A hive should be so constructed as to allow the bees to travel into every nook, crevice and corner thereof, in order that they may be able to *drive* out the bee moth or *drag* out its larvæ. It should allow of being contracted or expanded in size, in order to accommodate a large or a small colony; and at the same time should be large enough to hold the largest colony the apiary contains. It should allow ample room directly over the colony for surplus comb, and admit of being tiered up to any desired height when working for extracted honey. It should also allow use of the amplest means for winter protection, and of perfect ventilation both in winter and in summer.

There are many other points that could be mentioned, but they are all given in the text books, and I need not enumerate them here. I have experimented with all the so-called "best hives," and given them each a careful test, and I have made choice of the one *I* deem the best; and not only myself, but a majority of our ablest beekeepers have made the same selection. The fact that *I* have made choice of a certain hive, might not be considered weighty evidence in its favor; but the fact that the majority of our most successful honey gatherers have made the same choice is evidence in its favor of the strongest kind. I refer to the regular "Langstroth hive," full size. I make no criticisms on other hives; all frame hives are valuable, but the "Langstroth" seems to "fill the bill" more completely than any other. I believe in a "standard" frame, but at present it is impossible to make a selection that will be adopted as such; the beginner, however, in selecting the "Langstroth," will "wheel into line" with the majority, and come as near a standard as is possible at present. The best results yet attained (1000 lbs. from a single colony in a single season) came from a Langstroth; and wherever it is used it is found at least the equal of any other, whether used for surplus

honey either comb or extracted, for rearing bees or queens, for ease in manipulation, and safety in wintering on summer stands, or for giving needed ventilation in our sultry August afternoons. In fact, I do not know of any desirable points contained in any hive, that are not found in the "Langstroth," and heartily commend it to the prospective beekeeper as *the one* for him to choose.

Foxboro, Mass.

BEEKEEPERS' REPORT FROM QUEBEC.

By B. G. Jones.

As I promised to give you a report of some of the doings of the beekeepers of this province, I will try and do so now.

The season has not been as good as was predicted early in the season. Through the efforts of some of the beemen of this county, the agricultural society offered nine prizes on honey and implements. F. W. Jones exhibited some six hundred pounds of honey; Jones Bros., about the same; E. E. Spencer, M. P. P., exhibited some of the finest comb-honey ever produced in the province. Jones Bros. exhibited supplies on which they received first prize. There were about a dozen exhibitors, but this will not interest your readers, hence I will try to write something more interesting to our American cousins.

There was an informal meeting of beekeepers held at the time of the fair, when it was decided to hold a beekeepers' convention, which was called by the following apiarists: F. W. Jones, E. E. Spencer, M. P. P., D. F. Hawley, R. Small, J. Raymond Ball and Jones Bros.

There was a good attendance at the meeting held at Cowansville on October 20, where it was decided to organize an eastern township beekeepers' association similar to the Ontario Association. The following officers were elected: President, E. E. Spencer, M. P. P., first Vice President—,second Vice President, B. G. Jones, Secretary and Treasurer, R. Small, Executive committee, T. M. Craig, T. W. Jones, J. M. Watt, T. A. Johnson and —.

A very instructive meeting was held by those attending; valuable information was brought out on feeding, wintering and managing bees in general, which I will try to give the readers of the "Apiculturist" if you think best.

In your editorial on page 252, Vol. III, you speak about a new disease. While we have never had it in our apiary, I think I have seen it in other apiaries and I think that it is caused by poor honey and I further think that partially soured honey or cider will also produce it.

Will bees make comb of candy made from granulated sugar? [Yes. Ed.] I always thought they would not until last spring. We had three or four colonies out of food in March and we had to feed candy; when we set them out in the spring the weather was unfavorable for feeding and we left the frames of candy in the hives for ten or twelve days; when we opened the hives to remove the candy we found the latter almost all gone and a piece of comb about 3×5 inches in size attached to the top-bar. The frame was almost full of comb when we set the bees out and we are pretty sure that there was no honey in the hive nor any gathered when they were building the comb.

Which pays the better, extracted honey at $12\frac{1}{2}$ cents or comb honey at 15 to 18 cents?[1]

B. G. Jones.

Bedford, Quebec, Ca.

[1] If we could sell all our extracted honey readily at $12\frac{1}{2}$ cents per pound we would much rather run our apiaries for it than to run for comb honey at 15 to 18 cents.—Ed.

HOW WE MANAGE OUR BEES.

By D. F. Lashier.

I say "we" because my wife helps me when I get more than my hands full. She rears canary birds to sell and I make her cages and buy the seed, so she says that it is no more than fair that she helps me with the bees, especially during the swarming time. When the weather is fair every day then I can manage them (100 colonies) alone very well; but when it is stormy and cloudy for a few days and then clears up and the sun comes out again, we know what to look for.

In the first place we have everything in readiness which is one-half of the victory; hives all prepared and sitting in the shade in the centre of the apiary. Then we have some light swarming boxes that I made in the winter. It makes no difference what the size is, so long as they are about the capacity of a hive, with large openings in each side covered with wire cloth as the bees need considerable air after such violent exercise. We have the covers well secured with hinges and so arranged that when we shut the cover down it will stay there even if we should let the box fall with the bees inside.

In order to avoid the vexation and trouble of climbing for swarms I gather some of last year's mullein just before swarming time and after tying them in bunches (say ten stocks in a bunch) I fasten them on the trees where the bees will hang in the shade when clustered and where I can reach them easily.

While this may be an ancient practice yet, as I will show, it is a more valuable one; you see, these little bunches of mullein resemble little clusters of bees so much so that two-thirds of our swarms alight on these decoys. So you see we get large returns for a small amount of labor.

When a swarm issues we wait quietly in the shade until the bees have clustered and become quiet, all the while keeping a sharp lookout lest another swarm issue before we can secure this one. If another should chance to start we just sprinkle a little water on the bees to check them for a while; but mind, this sprinkling must be done at the very first start of the bees in order to prove effectual.

The swarm, left to cluster, is now ready to be hived. By waiting until the bees are quiet we are sure that they have a queen with them and will not leave the new hive to return to the old colony.

Our hives are side opening and if the cluster is down near the ground quite handy we just place the hive so that the open side is just under the cluster, give the limb a sudden upward jar and usually hardly a dozen bees will be left to return to the old colony.

When they chance to alight higher up we use the swarming box and after the bees have been secured therein set them in the shade for a few moments until they are quiet, when we give the box a sudden jar which settles all the bees on the bottom; then we raise the cover and pour the bees into the hive and adjust the movable side. If this is done rapidly and skilfully, very few bees will escape or be crushed during the operation.

We set the hive right side up with the entrance closed and then let the bees alone for a few moments until they have had time to run up and cluster at the top, then we open the entrance and not one swarm in fifty attempts to swarm out, this giving them time to run up the sides and cluster at the top is a matter of vital importance.

Hooper, N. Y.

EDITORIAL NOTES.

THE WEATHER.

If the reports regarding the weather west and south are not exaggerated, we may expect to hear of fearful loss of bees when spring opens. The careless beekeeper who left his hives unprotected on the summer stands will be most likely to make the first report of *heavy* losses.

With the exception of one week of severe weather, the season here has been mild and not at all bad for bees wintering outside. We saw a few bees flying, within a week, from hives left out.

BEEKEEPERS' CONVENTIONS.

This is the season for beekeepers' conventions. Of late there seems to be more interest taken in such matters. Judging by the reports we receive, the attendance is much larger than usual; this means, of course, increased interest. These meetings should be attended by all who can spare the time. The novice goes expecting to hear the old veteran tell all he knows about bees and their management; we suspect that but few of the latter class give themselves away on such occasions. There is much about bees and beekeeping that can only be learned by long and sometimes costly experience. The novice must learn some of them the same way. One would have to attend many conventions in order to get from any experienced beekeeper all he knows about bee culture. It is best to attend the conventions and meet some of the men whose contributions in the various journals are read with so much interest and benefit to the beginner and inexperienced.

CLEANSING FLIGHT IN WINTER.

Bees that are wintered on the summer stand will take a flight when the temperature reaches 45° in the shade. We have permitted them to enjoy a frolic at such a temperature, provided the wind is not blowing too hard. We would not think of removing bees from the cellar, or bee-house to give them a flight unless the weather is much warmer. A few of the bees may be lost on the snow when the temperature is as low as 45°, but the loss in this respect is more than compensated for by a cleansing flight, which is of immense advantage to any colony after it has been confined in the hive two months or longer. We like to have the bees fly about Feb. 20, and if the weather is sufficiently warm at that time, and the bees need a flight, they are given an opportunity to do so. If there is snow on the ground it will be thickly bespattered with the excrement of the bees. The inexperienced suppose this fact to indicate that the bees are diseased with dysentery. Such is not the case. When bees can fly and discharge their fæces outside the hive, it is a pretty sure and never-failing test of perfect health. Bees suffering from dysentery cannot fly; their bodies are so distended that they cannot take wing.

The fronts of hives left on the summer stand should be shaded from the light and warm sunshine. This can be done by standing a wide board against the hive. Unless thus protected many bees will venture out and be lost on the snow. A few bees lost each day, in this way, would sadly reduce the colony before spring.

A REGULAR VISITOR.

Mr. H. D. Davis of Bradford, Vt., made his annual visit to us a few days ago. Mr. Davis had several samples of his new and neat device for one-pound sections. These sections are made from white poplar wood, and the workmanship is a credit to anyone. After the sections are filled, the honey is protected from injury by thin wooden sides which fit in place nicely, and having an inch and a half aperture in them covered by transparent mica, so that the contents of the box can be seen. It is a neat and attractive way for putting up honey. This device is protected by letters patent, and it is the intention of Mr. Davis to protect the public from being swindled by unscrupulous dealers who persist in purchasing a few pounds of some well known brand of pure honey by which they can dispose of the vile stuff they know to be impure.

Mr. Davis will sell these sections only to those who will comply with his terms and conditions. Some of the sections Mr. Davis had were filled with beautiful honey, which we know to be good, as we had the pleasure of "going through" one of them.

A NEW IDEA.

Beginning with the April number of the Apiculturist, "Old Beekeeper" will propose such questions for answers, as will elicit information applicable to the current month. The answers will give instructions how to manage and care for bees each month.

These questions will be answered by experienced and practical apiarists. What they advise and suggest may be safely adopted and followed by the novice and inexperienced beekeeper.

As the winter does not end till April, we will give answers to questions in the March number, concerning mouldy combs and how to treat them; also, best methods for preventing the rearing of useless drones.

NOTICE TO CONTRIBUTORS.

We have permitted one of our most valued correspondents to express *his* opinions quite freely concerning patents. His ideas do not agree with our own. Many men have spent the better parts of their lives in perfecting some valuable advice, by which mankind might be benefitted. We believe such untiring zeal should be rewarded. How can this best be done except by government protection, or, in other words, by a patent?

If any one has obtained a patent through fraud upon any article used by beekeepers, we will, upon satisfactory evidence publish the facts to the world.

While the columns of the "Apiculturist" are open to all who desire to discuss questions pertaining to bee culture, we do not intend for any one to use them to berate any publication, or the character of any person. What we want is solid facts, such as will advance the cause of apiculture.

DELINQUENT SUBSCRIBERS.

A few of our subscribers have not renewed their subscriptions. To such we shall mail a few more copies of the "Api," as we wish to give plenty of time to all in which to send in the required amount for another year's subscription.

APICULTURIST BEE FARM NOTES.

Very little of interest to our readers has transpired at the Apiculturist Apiary the past three months. Our bees were placed in the cellar some over two months ago. A few days since, we examined them by opening the door to the bee-room and letting the light in for only a moment. Although this was a hasty examination, yet to all appearances the bees were in fine condition. Very few dead bees (not a quart in all) were on the floor, and everything seemed to be as well as we could expect or desire. Of course, the worst part of the winter for the bees is to come, but then, if bees are not now in good condition we could not expect them to be so later on.

Nearly all our colonies had more or less sugar syrup fed them in the fall, and as the late gathered honey was of a fine quality, we have every reason to expect the bees to go through the winter safely. The pollen theory never disturbed us, and so far as our experience goes, not one colony has ever died from eating pollen.

We intend to open the cellar again in March, and examine the bees. If any are uneasy, and seem to be suffering for a cleansing flight, such will be placed on the summer stands. If old "Prob" says that "a cold wave is approaching from the northwest" the bees will be placed in the cellar again, and left there until it is sufficiently warm and safe to put them out for the season.

The business at the Apiculturist Bee Farm the coming season will be the production of the finest queens, and to furnish apiarian supplies of the best, latest and most approved kinds. All the articles, such as hives, smokers and in fact everything offered for sale at the office of the "Apiculturist" will be only such apparatus as are the most useful and needful in the apiary in order to make bee culture a success. We believe in working good material and doing good work. Cheap, shamy made articles are a nuisance in any apiary. We have some hives in our apiary that have been in use for twenty-five years. One good coat of paint would make them look as good as new. These hives were made of the best lumber, and if well cared for, will last twenty-five years more. As a rule, most goods used and sold by dealers are constructed in an unworkmanlike manner, and of the meanest material. Such goods do the dealer no credit. In our experience with bees we have purchased more or less nucleus hives. The frames were constructed of coarse lumber and made up so poorly that they were worthless, to us, at least. We have received frames made with but four nails, one at each corner, and without the use of a proper nailing block, and very nearly one-fourth of an inch out of "true." Frames will not hang thus made so that they will not touch the one next to it at the bottom, and when removed from a hive, many bees are killed and the

operator wonders "what makes the bees so cross."

Each frame should be nailed on a block, and two nails put in at each corner, or eight nails to a frame, then each frame will be a duplicate of another.

We are now making every preparation for another season's trade. Among the new things to be used in the apiary is a new queen nursery. Our old style had but eighteen cages, while the new one will have twenty-four. These same cages will answer for shipping and introducing queens as well as for hatching cells and preserving surplus queens. By our system of queen-rearing a nursery of twenty-four cages is equally as valuable as the same number of nuclei. When a fertile queen is removed from a nucleus, an unfertile one at the proper age to make the "mating flight" is ready to be introduced; thus it will be seen by such an arrangement, queens can be reared very rapidly, and at half the expense and trouble that most dealers go to.

ITEMS FROM THE DETROIT CONVENTION.

Mr. McLain, echoing the statements and opinions of many of the more prominent apiarists of the past and present, said that it was "absolutely necessary that the bees have easy access to salt, and that the apiary should be abundantly supplied with it at all seasons of the year when the bees are at work in the fields." He further stated that the bees must have saline properties when rearing brood and collecting honey and that without these they will become diseased and that when the former cannot be obtained readily about the apiary from the soil, and other sources, the bees will resort to the mullein which yields the same abundantly and in their endeavors to obtain these properties from the mullein, the bees become entangled with the glutinous fibres of the mullein, so often referred to and illustrated in the past.

Mr. McLain asks, "May this not in a measure at least explain the "new bee disease?"

The fact, as we stated in the November number of the "Apiculturist," that salt had cured some bees and to all appearances eradicated all traces of the disease, seems to warrant this conclusion.

The *British Bee Journal* for December 1st, alluding to this disease, states that, in its opinion, supported by actual experiment, the new bee disease of America is none other than the *Baccillus delphilis* (auct. *Gaytoni*) of Mr. Cheshire and it further states that "a colony treated carefully with phenol has been entirely freed from all traces of the disease."

The Rev. L. L. Langstroth in response to the call for a speech said:

When he met a beekeeper he felt that he had met a friend. When he first commenced the study of apiculture with the intention of improving its condition, he could not, with his limited resources, see just how his wishes could be accomplished, but he thought that he would be doing God's work by helping to flow the land with "milk and honey" and he would be glad to see honey as cheap as butter.

Regarding his invention (the movable frame hive) much more credit had been given him than he could appreciate. His ideas had not developed into something practical. Where would he have been but for Moses Quinby and Adam Grimm? His invention was practical and these were practical men to take hold of it; but for this his invention would be of but little use.

He also stated that the Good candy was given by a Rev. Mr. Schultz of Germany many years ago. If men had known and practically used this candy (or bee food,) ere this many thousands of colonies might have been saved from starvation and much credit is due Mr. Good for bringing it into practical use.

Mr. Langstroth also stated that he had made no money out of his invention; he had not the knack of making money. He never had any ill feelings against anyone, for if he had not the money he had what was worth more, the confidence and affection of the beekeepers.

If he had $100,000 and men pointed to him and said he was a fraud or mistake that would not satisfy him.

At the Detroit Convention, several members concurred in the importance of attention being given to sowing and planting for honey production.

QUESTIONS AND ANSWERS.

QUESTIONS BY A BEEKEEPER.

1. What honey extractor do you use? How many frames does it take?

2. What do you think of feeding sugar dry or moist, as given in the article on page 256, Vol. II, "Apiculturist."

3. Do you use wide frames or racks for sections; also what kind of separator and why?

Please describe your system and its advantages.

Do you use the queen-excluding honey board?

4. Do you consider packing beneath the bottom-board beneficial when wintering on summer stands, and what are your reasons for or against it?

5. Do you ever discard or melt nice straight combs in frames on account of age or long use in brood chamber? If so, how many years do you use a comb in brood nest?

ANSWERS BY L. C. ROOT.

1. The first honey extractor I used was very hastily constructed. As soon as we received the words "centrifugal force" for throwing honey from the combs, we removed the gearing from an old fanning mill and for a reel we used the arbor and pieces to which the fans were attached; these we arranged in a square box. In some respects that was the best machine I ever used. The crank was long, the gearing firm and strong. I could maintain an even, steady, firm motion, which none of the later machines will allow of.

I next used the Peabody machine. This machine revolved, can and all. This had its obvious objections, and was soon dropped from the market.

For the past few years I have used the Everett and Muth machines. They are both good ones and for ordinary work they answer every purpose.

I took, in one day with the Everett machine over 4000 lbs. To do this I made some changes in the machine, by supplying a longer crank and changing the gearing. The past season I purchased a Stanley reversible machine. The manner in which the combs are reversed is as perfect as could be desired and will prove a great saving of time and labor.

Their two-comb extractor seems to work perfectly and is, I think, all that they who extract honey in a limited way could ask in a machine.

Those who extract largely and need to do it rapidly and with the greatest possible speed, find all of the extractors offered to the trade unsatisfactory. They lack in length of crank, strength of gearing, reel, and can, and none of them are supplied with a needed brake to be operated with the foot. They are also deficient as regards the construction of the reel which should admit of the combs being readily placed in the extractor or unmoved from the same, and at the same time be held in place against the wire cloth.

2. I am opposed to the use of sugar in any way in connection with our business.

3. I use a rack or case to inclose my boxes when placing them upon the hives.

I use wood separators and consider them better than metal. If the wood separator is $\frac{1}{4}$ in. or more in thickness it enlarges the entrance to the boxes, which I find beneficial. I use no honey board. I consider ample room for the bees to enter the boxes very desirable.

4. I have used packing under the hives, but do not think it desirable. Moisture seemed to accumulate and the dead bees mould more than when the bottom is not packed.

The great need is to have the inclosure about the hives very tight so as to afford ample protection from cold winds.

5. With me, combs seem to improve with age. I have those that have been in constant use for over twenty years.

ANSWERS BY W. M. KELLOGG.

1. My own make. Two frames.

2. Have not read the article. But I do not think it pays to feed dry sugar, or in fact *any* sugar, except to stimulate brood rearing.

3. I use a rack for sections holding three sections, with a tin separator nailed across one side. I use tin because I have never used any other material enough to convince me there is anything better than tin. By using these three section racks, I can put on more or less at a time, sections

can be handled more quickly and stored better, and with end followers of glass frame they form a close box that can be tiered up at will. I use a skeleton honey board for these racks to rest on, which gives a ⅞ space between bottom of section holder and top of frame for ready access of bees. I use a strong cord to bind the racks and end followers together. This fastening allows me to form a box of any number of rows of sections up to the full capacity of hive. It does away with blocks, wedges, etc., and I have no close fitting places to crowd a full section of honey out of. I do not use, and have no use for a queen excluder.

4. Yes. It keeps the bottom of the hive dry and allows enough fresh air to supply the bees if the entrance becomes clogged. (I refer in this to chaff hives.) I use no under packing on common hives for I do not winter them out of doors.

5. No, unless the edges of the cells become thick and clumsy. I use them as long as they keep clean and open, regardless of age or color. Have some that I know are over twenty-two years old. Frequent changing and extracting has kept them as good as new.

Oneida, Ill.

ANSWERS BY G. L. TINKER.

1. King's. Two.

2. We should never feed sugar, dry.

3. There may be those who think they can "get along" with wide frames, but we have long since lost all patience with them. We use section cases to hold our sections, adjustable, from four to twenty in a case. They are operated upon what we term an intermediate rack made queen-excluding with perforated zinc, the passage ways from the brood combs to the sections being continuous. The advantages of such a system are manifest in the production of about one-third more comb honey than can be produced by any other system. We do not use separators, because they are an unnecessary expense, cause extra labor in manipulation, and since we can get all comb honey in equally as good and marketable shape without them.

4. Yes; for the reason that packing on the bottom of the hive in out-door wintering is a measure of protection.

5. We might, if we live to be old enough. We have had them in use ten years and such combs are still very good. Have known brood combs to be in constant use for thirty years, and they were still serviceable for brood. If we have any crooked or uneven combs, we melt them up, but no straight ones.

ANSWERS BY D. D. MARSH.

1. The Peabody, which takes two frames. I only extract in a small way; but if largely engaged in it, I should use an extractor which has a revolving basket, but does not itself revolve.

2. Do not think it a practicable way. A thin syrup is more efficient. Should prefer candy to dry sugar wet up with bee-breath.

3. Have used wide frames with 8 "novice sections;" but in our limited pasturage hereabouts a story full of them furnishes too much box room at the outset; the upper set of boxes are too far from the brood. If I used them, should prefer shallow frames taking only one tier of boxes. I use the "Crane clamp" for two pound sections, which holds 6 sections, with wood separators. Put three of these clamps on, side by side, and with a strong swarm can tier them up. They are very satisfactory, because I can put on one clamp to begin with, then add others as the bees get into the boxes, and taper down as the season closes. I use the "Bristol clamp" for one pound sections: it is similar to the one just described, only it has two rows of sections, twelve in all, with wood separators, one set all are held in tight by a following-board and screw in the end. I put two of these clamps on my eight frame hives, and can tier them up. Mr. Manum of Vermont uses these clamps and thinks them the best. I would not use any other. The advantages are, you can put on, and take off, a half, or a third, of your surplus arrangement at a time. Have never used the queen-excluding honey board, and have very seldom found brood in sections.

4. I should consider some packing, or double thickness, or dead air space, *beneath* the honey board beneficial, if the hives were well up from the ground, so it would not gather and hold dampness from the ground. My hives are double-wall, but have only a single thickness of inch board for bottom; yet I would prefer protection beneath as well as on top and sides.

5. Combs can be used a great many years without any practical loss of usefulness as brood combs.

Georgetown, Mass.

ANSWERS BY JOHN H. MARTIN.

1. I use the Stanley Automatic honey extractor; it takes four frames and as far as our experience goes it does all the Messrs. Stanley claim for it.

2. I am in favor of feeding sugar moist.

3. I use racks; wide frames get stuck up with propolis and many times in removing sections they become cramped or broken. I use no separators. Honey built upon full sheets of foundation made on the Given press is uniform in thickness and has no fishbone in the centre. Separators are only necessary, where you wish to glass the sections, and there are but few markets that do not prefer them without glass.

My system for both comb and extracted honey is tiering up. You can give the bees room as fast as they are ready to occupy it.

I have never used the queen excluding honey board, but am favorably impressed with it and shall give it a trial during the coming season. When running for extracted honey, many times the queen will fill both lower and upper story with brood and finally locate all of the brood up stairs for winter. I have queens in my apiary that will fill fifteen frames with brood; this gives us a host of bees, and the necessity of tiering up. Still further I think as much honey could be obtained in the long run by confining the queen to the lower story.

4. I think packing beneath the bottom board beneficial. It *helps* to retain heat; bottom boards are liable to check or shrink and leave openings where you do not want them. Packing keeps all of these points snug.

5. I never discard nice straight combs. I have combs from which I have extracted honey for twelve years, and I think they will not deteriorate in twelve years more. Many claim that brood hatched in old combs is smaller than when hatched in new comb. I shall claim that young bees are as small from new comb as they are from old. A bee develops to full size after it is hatched. I shall furthermore claim that the bees use (or remove) the cocoons after combs get to be of a certain age. Proof: the microscope shows shreds and refuse that can be accounted for in no other way.

ANSWERS BY IRA BARBER.

1. I use the G. W. Stanley Extractor three frames at a time.

2. All the experience that I ever had in feeding dry sugar was many years ago, when I had a yard of bees several miles from home, and some of the stocks were not able to take care of liquid food. To all such I gave a cake of maple sugar weighing about four lbs., placing it on top of the frames, and under the quilt. The robbers could not carry it off any faster than they could liquefy it, and it worked like a charm, for so long as the lump remained the colony was safe from starvation. This was in the spring, and before bees could get a living.

3. I use a honey rack that takes 30 one lb. sections, tier up as the colony requires, and prefer short separators, and I want them as rough on both sides as the saw will leave them; then there is little danger that the bees will build braces from the comb to the separators; with smooth separators it is quite common. I do not use any honey board or queen excluders, but set the honey rack top of the frames.

4. Winter bees in cellar, tiered one top of the other, four deep, and the bottom ones warm those on top.

5. Never see a brood comb too old to be useful if kept bright and clean, and I have those that have been in use more than twenty years.

ANSWERS BY PROF. A. J. COOK.

1. I have used and now have Muth, U. S. Standard, Excelsior, A. I. Root, and Stanley's, all but the Muth take four frames, and all are excellent.

2. I have never practised it, and see no reason why I should, except that I neglected my bees in fall and suffered them to go into winter quarters with too little food, which I never propose to do.

3. I use racks, and like them much better than wide frames. I have used wooden and tin separators, and am now trying to learn to do without any, but find I learn rather slowly. I have best success with crates or racks and tin separators as yet. I like best the Heddon rack and hive, and like the tiering up plan with the intervening bee space *very much*.

I use the honey board, with double bee space. As the queen has not troubled me by entering section, I have not used excluding honey board, except on a few hives.

4. I should think it well, as it protects against cold. But I do not favor out-door wintering in our state.

5. I have those which are fifteen years old, and they are still good. I have seen comb, however, with cells too small for brood comb.

LETTER BOX.

Eldora, Ia.

DEAR SIR:

The season has been a poor one with us. We began the season with ten colonies, seven good ones and three weak ones. Increased them to twenty-five, which are all in fair condition for winter, and secured 250 lbs., comb honey in lb. sections, all from white clover, basswood failing to secrete any nectar in our locality, although a beekeeper living about eight miles west of us took forty pounds of surplus honey from some of his best colonies all gathered from basswood. We shall winter twenty colonies in the cellar, and five are packed in chaff, and sawdust on the summer stands.

J. W. BUCHANAN & BRO.

Fisherville, Ont., Oct. 13, 1885.

FRIEND LOCKE:

The "Am. Api." vols. 1 and 2 to hand some time. I was very much pleased to find it so well bound. As to its contents it is useless to tell you that I consider it of value to beekeepers in every stage, as it treats not only upon matters of interest to every beginner but dwells upon and gives us the very latest information, foreign and home, upon the "unsettled" points in apiculture.

I have asked many prominent beekeepers in Canada their opinion, and their praise of it has been unanimous. Mr. J. B. Hall of Woodstock and others state "it contains the cream of bee literature."

Keep it up.

Yours sincerely,

R. F. HOLTERMAN.

Crosbyville, S. C.

DEAR SIRS:

I received the bound "Apiculturist," Vols. 1 & 2, and am well pleased with it. I get more information from it than from any book I have on apiculture. The question and answer department is a splendid thing.

W. W. CROSBY.

DEAR SIRS:

The Vols. 1 & 2 of the "Apiculturist" came duly to hand, and I am delighted with it, and shall do all in my power to increase your list of subscribers.

E. W. PANTON.

Mankato, Kans.

DEAR SIRS:

Noticing that you wished to hear reports on the methods employed in introducing queens, I decided to send you the following. The queen came all O. K. on the 9th of Sept. with but one dead bee in the cage. I kept the queen in my coat pocket until 10 o'clock a. m. the next morning, when I went to the hive, destroyed eight queen cells and hung the caged queen in the centre of the cluster after which I went to town.

On my return at 4.30 P. M. I went to the hive to see how the queen and bees were getting along. On opening the cage the queen ran out among the bees as if she had lived there all her days and she was received all right.

When I packed the bees ready for winter she had four combs filled with brood, and here I would say that any one can safely introduce queens with such a queen cage. I have received queens from Tennessee to Massachusetts and I never have lost one in introducing. When I wrote you that when I received a queen I always succeeded in safely introducing her, you had your notions about it, but I want to know who can beat the record that I have given (six hours in introducing your queen). With one queen it took from Saturday till the following Thursday, as I never release the queen until I am confident that she will be permitted by the bees to reign as their sovereign. I can judge by the action of the bees when it is safe to do this.

I introduced my first queen in the year 1876 and to date I have never lost one. All that I ask is that they are in good condition when they reach my post office.

DAVID ROSS.

Wilton, Me., Oct. 20, 1885.

DEAR SIRS:

I received the queen all right, Sept. 26. I hunted for the black one, Sept. 28, did not find her; Oct 2 succeeded in securing the black queen and liberated the Italian queen on Oct. 4. The bees received her kindly. Owing to bad weather and robbers, I did not look for her until the 17th inst., when I found her all right. She is a beauty. I am much pleased with her. She is the first queen that I ever saw.

O. H. SEWALL.

Tustin City, Cal.

DEAR SIRS:

Received the queens in eight days from date of shipment, and they were in fine condition, as lively as crickets, with but two dead bees in one of the cages.

On the next day I took them to my apiary, twenty-five miles from here, and introduced them according to accompanying directions, with perfect success, and they are laying nicely.

I am well pleased with them. The $5.00 queen is the finest that I ever saw.

I received the books and drone trap, etc.; they are all more than is claimed for them. The bound volumes are an ornament to any library.

I would not take many times what the goods cost and be without them.

JEFF. WILLIAMS.

East Randolph, Vt.

DEAR SIRS:

I was much pleased with the "Apiculturist." I think it the best bee journal that I ever saw. It is plain and right to the point. The June number was to the beginner all that you ask for it for one year.

You can count on me as long as I keep bees.

GEO. C. BRIGHAM.

SHIPMENT OF BEES TO NEW ZEALAND.

DEAR SIRS:

By the mail steamer I duly received the shipment of queens which arrived in very good order. Six of the ten queens were alive, five being strong; but one was slightly injured by getting between the wire and the side of the cage. The other four were dead as well as their attendant bees, but why they should be was not by any means clear. I succeeded in introducing five of the six successfully to strong colonies and they are now laying all right. The other died before I liberated her. They were in confinement just forty days. I think the way they were sent is very good and likely to give good results.

I had paid the cost from San Francisco before the steamer left here, but am much obliged for your having done so thus avoiding any hitch. I am much pleased with the result and think you deserve great credit for the care taken in preparing them for the voyage. H. J. BAGNALL.

Turua, Thames, N. Z., Nov. 9, 1885.

SPECIAL NOTICES.

Messrs. E. T. Lewis & Co. of Toledo, Ohio, the well known dealers in apiarian supplies, are now ready to mail their new circular and price list to all who desire it. They are ready to fill all orders, except for bees and queens, the day they are received.

Hawkes Park, Fla. Jan. 18, 1886.

Gents:-Please to give notice through your valuable paper, that the late cold spell killed a good deal of our mangrove. So if any of its readers are thinking of coming here to keep bees, they had better hold back until they find out how badly the honey-producing plants are injured.

Yours truly,

W. S. HART.

PRIZES FOR HONEY AND BEES AT FAIRS.

HINTS TO VICE-PRESIDENTS.

During the first three months of the year, the premium-lists for County, State and District Fairs are usually made up. The Vice-Presidents of the National Society should therefore soon commence their work.

I would respectfully suggest that they communicate with the different Official Boards of the Agricultural Societies in their respective States, and endeavor to induce them to offer appropriate prizes for BEES and HONEY at the Fairs for the coming season.

The following, or something similar to it, would be well to recommend in the line of prizes:

Best colony of bees in observatory hive; best display of comb honey; best display of extracted honey; best display of beeswax; best honey extractor; bee-hive for all purposes; and largest and best display of apiarian implements.

Each vice-president and secretary of State and local societies will understand the requirements of their locality, and act and govern themselves accordingly. H. D. CUTTING,

Chairman of Executive Committee.
Clinton, Mich.

The American Apiculturist.

A Journal devoted to practical Beekeeping.

ENTERED AT THE POST-OFFICE, WENHAM, AS SECOND-CLASS MATTER.

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SPECIAL NOTICE.

The Apiculturist will be sent three months to any address for 25 cts., six months for 50 cts. or one year for $1.

To each new subscriber and to those who renew their subscriptions promptly, we will send likenesses of Rev. L. L. Langstroth and the late Moses Quinby.

SECTIONAL BROOD CHAMBERS.

BY DR. G. L. TINKER.

THE extensive discussion the past year in the bee journals, on the modes and the advantages of reversing brood combs as well as the result of trial, has proved that there is no profit in reversing combs singly not that there is no advantage to be gained from the practice, but because of the labor required. Like many other discussions in our journals, the truth that we had sought — the germ of wheat sifted from all the chaff,— is quite unlike what we had been seeking or had anticipated.

It is no new idea, by any means, that the getting of the brood close up to the sections in working for comb honey is a measure of great value. As the outcome of all invention and discussion, we have discovered perhaps all of the plans by which the brood can be brought near the sections, so that we may now point out the one plan most practicable and valuable; and right here I wish to say that no one man is entitled to all the credit of the discoveries made, because all beekeepers, or nearly all, have had a part in making them, and have prepared the fraternity at large for an innovation in our methods that without this, preparation of the apicultural mind would have been impossible. The credit, I assert boldly, is due rather to the great fraternity of beekeepers who have made discovery possible through their united labors, but now make the introduction of the new appliances and methods certain. As the matter now stands, one beekeeper is as much entitled to the benefits, as another, and I trust and believe that all will look upon it in this light, and hesitate not by virtue of a just right to adopt the improved methods as soon as convenience will warrant, and the revolution in the construction of brood chambers and in our methods of management will demand.

But I am strongly convinced that nothing has yet been brought out that will enable to the fullest extent, the practical advantages that are to be derived from our new discoveries. It is our object, however, in writing this article, to throw some light on this subject.

But first, what is the most practical and advantageous method of dis-

posing of the brood near the sections at will? Beyond question, it is the proper management of the shallow, sectional brood chamber! Has it any disadvantages? We assert fearlessly that it has not, neither in wintering, the laying of the queen or in the manipulation of hives or combs!

Until about five years ago, a hive, the brood chamber of which was in three shallow sections, each $5\frac{1}{4}$ inches deep by 12 by 16 inside, has stood here in this town and contained bees uninterruptedly for thirty years. The colony in its thin walls of walnut, had resisted the cold and the buffeting of the storms of thirty winters, and it at last succumbed to the depredations of robber bees who gained entrance by its many rotten corners. It had always done well, was generally on hand with a rousing swarm in season, and besides, made a liberal surplus for its owner. When Father Langstroth, a few years since, recommended a thin walled hive for out-door wintering, I was quickly reminded of this old hive and colony. (The panels in the sides of each of the cases were not over $\frac{1}{4}$ inch thick.) That it had not been manipulated on the modern plan of tiering up the cases, and the placing of the brood next to the super was no fault of the hive. The combs were attached to top bars in each case on the Dzierzon plan.

REVERSING HIVES.

In a shallow sectional brood chamber we believe that there is no advantage whatever to be derived from reversing its sectional parts. The placing of the brood next the super, and any honey that may be in the upper case below the brood will accomplish all that can be done. We shall, therefore, have no use for a reversible hive. Again, as we shall not have occasion to handle the frames very much but instead the sectional cases, it will not be greatly to our advantage to have the frames as steadily movable as are L. frames. On this account a very simple case is all that is necessary to hold the frames—a case without ornamentation, clamps, screws or anything of the kind. Neither do we want a complicated bottom board, but all the parts of a practical hive of this nature should be, *and will be*, made only of a few parts and all very plain and easy of construction.

New Philadelphia, Ohio.

[*To be continued.*]

GETTING BEES OUT OF BOXES.

By P. R. Russell.

I find that none of us are too old to learn something, and this seems to be especially true of bee-keeping. Beekeeping is a remarkably progressive business. So much is this the case, that the best of us, if we would keep abreast of the times, must continually be on the alert for new and improved methods of management.

Hardly are we settled down in the use of a method or device, before it must be changed or set aside for something better.

All this is as it should be, no doubt, as it tends to increase of production, cheapening of products, increase of consumption, and is a real blessing to the masses, who could not otherwise enjoy the good things of life in so large a measure.

But there is one line of improvement that I would like to see advanced at the present time, and that is a *better* method of getting bees out of filled sections, in a sort of wholesale style, if you please.

I am free to confess that I have not as yet learned of any method that is wholly satisfactory in all cases. It is true that in a small way we may get the bees out with-

out much trouble, especially during a good yield of honey, by any of the old methods. But after the flow has suddenly ceased, or at the end of the season, when bees are fierce for robbing and we wish to remove cases of honey by dozens and scores rapidly, then trouble begins in earnest.

I want a plan whereby I can remove one or more cases in the morning, place them with the adhering bees under protection, go about other business for the day, and when I return at night, find that the bees have all escaped and none have found the way back again. I have tried wire cloth cones with a small hole in the apex, and much to my disgust have seen the bees pass freely in and out. Turning sheets or revolving windows require too constant attention, and are poor methods at best.

The best method I have found, and the one I am still using for want of something better, is a small building with one window. The whole outside of the window is covered with wire cloth, which projects some ten inches above the window-frame, with sufficient space for the bees to crawl in and out.

This is not my invention, and if it were, I hardly think I should be very proud of it, for after a time, the bees find their way back again, and at best, it is only a help. I would like much to see this matter further discussed by those who may know of better methods.

I think myself, that if anything is found that proves to be a complete success, it will be something that is adjustable to a window.

Lynn, Mass.

SMALL PACKAGES OF HONEY.

BY J. H. MARTIN.

SMALL fancy packages seem to be the tendency of the day for nearly all of the life-sustaining articles we use.

If we enter our grocer's we find all kinds of eatables, relishes and condiments put up in packages made to look wonderfully inviting by bright-colored labels and weighing from a few ounces up to pounds.

If we enter our drug stores what an array of all manner of bottles and boxes of all shapes and sizes and so pretty and at the same time so useless, are arranged with artistic effect to attract the eye and purse.

Every beekeeper can remember when honey was sold in five and ten and perhaps fifteen-pound boxes, and rough boxes at that, but now it is hard to find anything larger than a pound-section in the market, and an occasional half-pound. While this has been the progress, to small packages for comb-honey, extracted honey has been put up in pails, cans, jars and bottles of many sizes. These pound packages have had a wonderful influence in the development of our honey markets and the increased consumption of honey has been the result.

But it seems that, at present, a further educating influence must be brought to bear upon people to teach them that the candied state is the best way to purchase extracted honey.

Our pound packages are for table use and for whole families. Our cane sugar is also purchased by the pound for the family, but it is also done up in small packages in the shape of candy of many hues and of many nameless ingredients, and sold to the individual for his or her own private consumption, and how many tons of it are sold all over our country! If our honey could be sold as confectionery, this source alone would take our entire crop. The beekeeper looks upon this fact and mentally reasons: Why cannot I put up my honey in a manner to please the candy-loving world and thus sell tons of it?

Honey cannot be worked like cane

sugar and, according to the light we at present have, we must sell it in its original shape depending upon the novelty of the package. Our ideas have reached out to a package that would hold one-quarter of a pound and which could be sold for five cents, for if there is pleasure in an orange at five cents, there would be more in a package of honey at the same price. In Canada they sell a five cent package of honey in a small tin box, but in this yankee land they look too much like pill boxes and we are disgusted with the contents before we open them. The idea of a package in the shape of a canteen with a novel arrangement to force out the candied honey in the shape of a stick of candy, where it could be handily eaten off, has been suggested by the writer of this essay, but the demand being uncertain and the cost of special machinery would be considerable, perhaps something simpler may be suggested. It is evident that there is a tendency in this direction and at no distant day such a package will be put upon the market, and it is the object of this essay to call the attention of the ingenious beekeepers of Vermont to the question. When our finest comb-honey brings only ten or twelve cents per pound and our best extracted only four to six, it is time we were looking into this matter. It is of vital importance to the interest of the apiarist. How shall we disseminate our honey all over the country. Here is a locality that has too much honey and it goes begging at extreme low prices ; here is another locality where honey is scarce and good prices prevail, and thousands of country stores all over the country do not handle honey, but they sell candy. How can we get our honey into these localities and these stores? The question may be too knotty for any of us to answer, but if it cannot be answered so as to make a better market at more remunerative prices for our products, thousands of beekeepers would do better to turn their attention to some other business.[1]

Hartford, N. Y.

HOW TO COMPEL BEES TO ENTER AND WORK IN SECTIONS.

By Henry Alley.

This subject has not received as much attention as most others directly connected with beekeeping. It is supposed that bees will enter the sections when crowded out the brood-chamber by heat, and for want of more room in which to store the newly gathered honey. These conditions have the effect to "enthuse" and stimulate the bees to emigrate, or to seek more room which they can utilize for their increasing demands. These favorable conditions do not, in all cases, induce bees to swarm or to accept of surplus room and, sometimes, when they do enter the sections and fill them with bees, they will store no honey, nor build any comb, even though the sections are filled with nice foundation. A colony that has made arrangements to swarm will not usually enter the sections very readily and generally will do no work in them. Such a colony will "lay out" on the front of the hive until they are good and ready to swarm.

The question is ; can bees be compelled to enter and work in sections? I will give the experience of a beekeeper formerly the largest bee owner in the state of Massachusetts. Some twenty-five years ago, Mr. John J. Gould kept a large number of bees here in Wenham. He was troubled to get some of his colonies to enter and store honey in two-pound boxes or sections, as they are now called, so he adopted a method that rather

[1] An essay read before the Champlain Valley Beekeepers' Association, Middlebury, Vt., January 21, 1886.

outwitted the little fellows. He would remove a case of twenty-one two-pound boxes that were about two-thirds full from a strong colony, bees and all, and place them upon the colony too weak or too lazy to work and store surplus honey. This arrangement had the desired effect, as the colony thus treated soon finished the sections. Such an operation not only stimulated the weak colony to work, but it also strengthened them greatly as to numbers. The colony the sections were taken from were plenty strong to enter and work in a new set of sections. Now this was not a discovery with Mr. Gould. His practical knowledge of the honey bee suggested to him that the idea was a feasible one and he immediately put it into practice and the verdict was just what he had reason to expect.

My own method was not only to do as Mr. Gould did but, having a less number of bees, I would contract the entrance to each hive at night as this would prevent the bees from deserting the sections when the weather was cool. All upward ventilation was stopped, as it should be while the bees are at work storing surplus honey. The only ventilation should be at the entrance, as the bees will make just as much and as little air pass through the hive as they need.

There is one bad feature to this interchanging of bees and sections. Unless the operation is conducted with little disturbance, the queen, as is perfectly natural, will run up into the sections and of course be removed to some other hive. When the change is made it is well to blow a small amount of smoke in at the entrance and as quickly as possible, raise the section rack and direct the smoke under to drive the bees down. If this precaution is taken there is little or no danger of getting or destroying any queens.

Wenham, Mass.

HOW SHALL I COMMENCE?

By Will M. Kellogg.

I don't know that I can help friend Todd any (Feb. "Api") but I feel like trying. I take the ground that he has had too many irons in the fire and that his bee knowledge has been too much of theory, and his bees have been neglected or handled on theory. I think he is somewhat on the same ground that I am with bees and poultry; with bees, from long experience, I "have everything at my fingers' ends;" with poultry, though I have kept fowls of various kinds for years, and have many volumes of poultry reading, both books and journals, still I have had too little practical experience in a large way to make me feel at home among poultry keepers of years of practical work.

Had I not learned a lesson from knowing it all the first year I kept bees, I could launch out and tell old hands all about how to handle poultry and do it too from the practical experience I have had—on paper, as someone else has done it. Now, friend Todd, there is not much so very hard to do with successful management of bees. Beginners, lacking thorough experience, invariably do too much. Like a boy with his first chickens, he must scare the hen off every few minutes to see if she has laid; and the beekeeper acts the same in opening hives. It took me years to learn how to let my bees alone.

You speak of feeding bees because they had not enough honey to carry them through the winter. That is evidence to me of what I have said above. Now for my advice. Get some more bees in the spring, good, strong stocks, in a plain, simple, movable comb hive. Keep them snug and warm by preventing all waste of heat at the top, let them fill up the hive below, having a hive large enough for all brood rearing and am-

ple honey storage, *let this honey stay there*. Many losses occur from extracting closely all through the season, or cramping the stock in too small a space to allow but little more than the necessary brood, trusting to fall forage or feeding for the winter's supply. I never feed a stock of bees anything for winter. If a stock lacks, I give good sealed combs of honey; lacking that I break up the stock and unite with another. Poor food, late storage, or late feeding has caused more loss to beekeepers than all else combined. I have gone through the same routine that you have, dividing stocks too late to build up, not counting on the season but doing the increasing because I wanted to, extracting regardless of caution and all this kind of work. Let a strong stock alone, don't open it every time the notion takes you; let them have plenty of good, early gathered, sealed honey all through the season, and my word for it you won't have a poor, weakly stock in the fall. I am not writing theory but what I had beaten into me by hard, costly experience. Try again, friend Todd.

Oneida, Ill.

A GOOD REPORT OF THE ALLEY DRONE AND QUEEN TRAP.

By Mrs. S. E. Sherman.

I want to tell you of a little experience that I have had with Alley's combined drone and queen trap, and see if you will not agree with me that, in point of convenience and labor-saving, it should be ranked along with the honey and wax extractors and smokers. On March 14, 1884, my son and only child came home from college, sick. His disease was typho-malarial fever, which lasted him seventy-two days during which time my bees increased from twenty to forty-eight colonies by natural swarming. Had it not been for two of the above named traps that I had, it would have been impossible for me to have secured half the swarms, and at the same time nursed and taken care of my sick child. As it was, when a a swarm would begin to come out I would run and put a trap at the entrance, and by the time I could get my empty hive in place with a few frames of brood from the parent stock in it, and the foundation all right, the bees would miss their queen and come back pell-mell in search of her, and thus enter the new hive at once. In about twenty minutes the bees were hived and went to work at once without further trouble or ado, and I was back in the house with my sick boy. In hiving them thus I moved the old hive to a new location and put the new one in its place, and let the queen run in with the bees. It was a beautiful sight to me to see my golden Italians come pouring in a stream, so to speak, from the top of a tall elm tree into their new hive, without any climbing of trees or sawing off limbs, thus saving disfiguring the symmetry and beauty of a favorite shade tree. I had no help except a neighbor's little boy. After doing the chores at home he would come over and stay a few hours in the middle of the day to watch my bees and tell me when they were swarming. I do most truly and heartily thank Mr. Alley for his invention, and I would about as soon think of going back to the old gum hive as doing without the combined drone and queen trap. We are having a very mild winter so far here in Texas. It has not been cold enough to form ice worth speaking of but once, and it all melted long before night. We had a nice rain this evening, with a little hail.

Salado, Texas, Jan. 1, 1886.

THE ONEIDA COUNTY BEE-KEEPERS' ASSOCIATION.

Pursuant to a call by Mr. W. E. Clark, a number of the most enterprising beekeepers of Oneida County N. Y., met at Rome, November 21, 1885, and organized under the title of "Oneida County Beekeepers' Association." A constitution and by-laws were adopted, and the following officers elected for the ensuing year: President, R. Bacon, Verona; Vice-President, W. E. Clark, Oriskany; Secretary, O. J. Evans, Camroden; Treasurer, J. M. Reseguie, Verona.

Seventeen beekeepers became members of the association. Had the weather been favorable, many more, no doubt, would have been present.

After a considerable amount of routine work, which is indispensable in setting a new society on a solid footing, the subject of wintering bees was taken up.

President Bacon said, "Much depends on locality. Again, hives and the winters have something to do with it. You may treat bees in the same way two winters; one winter they may do well, the next very poorly. We should strike the middle line after getting all available information. Bees should be put up for the winter, dry and carefully. They must not be shaken up. Some cellars will do for wintering bees, while in other cellars they will not do well. I cannot keep mine in my cellar. I have a frost-proof bee-house. It is made double, the studs being about eight inches, boarded outside and inside, and this space of eight inches is filled with dry earth. On the outside of this again, are nailed studs two inches thick, to which is nailed matched siding, thus leaving a dead air space of two inches between the siding and the inner wall. The top of the house is covered with dry sawdust. I prefer to keep my house about 45°. My colonies do not consume more than from five to ten pounds of honey per winter. My bee-house more that pays for itself every season. On soft winter days, I give my bees a flight, and I find that they come out better than when they are not let out."

Mr. Clark said, "I copied my house after Mr. Bacon's, but got it so as to be a little too warm in the spring. I do not wish to let my bees out till the soft maple blossoms in the spring. I therefore sunk my house about four feet into the ground, and I found that the bees would remain more quiet in the spring. I had no ventilation at the bottom of my bee-house last winter, and my bees never did better. If the house has a damp air, it should be ventilated. I elevate the lower tier of hives about an inch from the bottom board. This arrangement, by admitting a free circulation of air through the hive, prevents the accumulation of mold in the hive, such as is often found, especially on, and in proximity to, the bottom board. The next tier is elevated about half an inch, while the upper ones need no more ventilation than the ordinary entrance. In regard to absorbent on top of the hive, I use old quilts, which I cut to the right size and lay on top of the hive. Last winter I put ten colonies in, with just the honey board on top, and those did as well as any. I have also packed some with dry sawdust on the top, after the manner of Mr. Bacon; but as far as packing on the top of the hive is concerned, I find but very little, or no difference. I have never tested chaff hives, but they cannot winter bees as well as a bee-house. I would keep the thermometer in my bee-house from 45° to 48°. The great object is to keep the temperature even."

The next meeting of the Association will be held at the Stanwix Hall, in Rome, N. Y., February 24, 1886, at 10 o'clock A. M.

O. J. EVANS, *Sec'y.*

FOREIGN NOTES.

By Arthur Todd.

The consumption of honey in England seems to be on the increase to judge by the Custom House returns, which shows that while in 1883 there was imported $166,000.00 worth, in 1884 the imports nearly doubled, and in 1885 almost reached the same figures.

The British Bee Journal (now a weekly) calculates that the imports for 1885 represent £ 2,738,347 and urges its readers to consider the great efforts they as beekeepers must put forth to checkmate these imports and reduce their amount. The B. B. J. sensibly says "There can be only one way by which this can be done, and that is, that the honey placed before the British public should be of superior quality, and not exceeding in price that imported into this country."

A great deal (far more than the average beekeeper has any idea of) of foreign honey is brought into the United States, and after paying a duty of 20 cts. per gallon enters into direct competition with the home product.

The American beekeeper must also place his honey of superior quality, and not exceeding in price that imported, before manufacturers and buyers generally, if he wish it always preferred.

I know factories using hundreds of barrels of honey per annum and they won't use American honey, because the price has not been right as compared with the equivalent saccharine matter, and flavoring powder obtained from the foreign article.

Christian Lichler, in the Deutsche Illustrirte Bienenzeitung, gives his experience of wintering three stocks of bees by burying them in the earth. A hole was dug in the ground three spades deep, one metre wide, and two metres long and as the ground was level, another and a deeper hole was dug close by to receive the water draining from the former.

The hole for the reception of the hives had a layer of straw placed at the bottom about a hand high, and the sides were also lined with straw. The hives were covered with cloths, and the entrances were protected against mice by means of perforated zinc. On the 2nd of November, 1884, it being a fine day, the bees thus prepared were weighed and placed in the hole. Straw was placed over the hives, and on these a spade depth of earth was put, then a layer of manure, just as potatoes are kept through the winter in northern Germany. No air hole was provided.

It being fine on the 2nd of February, 1885, and bees in the apiary flying freely and collecting hazel pollen, the opportunity was taken to examine the hives. On withdrawing them from the hole, they were found not only alive, but in a flourishing condition showing no signs of damp or dysentery spots. The average loss in weight per stock was two pounds during the three months.

As soon as the bees were placed on their stands they commenced flying out, and they were at once examined.

The first one opened had seven frames of which six were covered by bees in the autumn. Now there were enough bees to cover five frames, the third and fourth frames being filled with capped brood. The other hives were in an equally satisfactory state. The development of the bees in these three stocks was much more rapid than in any of his other hives.

No. 16 of "Die Natur" contains an article by Herr Gunnerig of Lassingen on German bees as storm warners.

From numerous observations the writer advances tentatively the theory that, on the approach of thunder storms, bees, otherwise gentle and harmless, become excited, and exceedingly irritable, and will at once attack any one, even their usual attendant, approaching their hives.

A succession of instances are given in which the barometer and hydrometer foretold a storm, the bees remaining quiet, and no storm occurred; or the instruments gave no intimation of a storm, but the bees for hours before were irritable, and the storm came. He concluded therefore that the conduct of the bees is a trustworthy indication whether a storm is impending over a certain district, or not; and that whatever the appearances, if bees are still, one need not fear a storm.

During the recent meeting of the Italian beekeepers at Milan, a machine was exhibited which Monsieur Bertrand (of the Swiss Bee Journal) considers an absolute novelty.

This was an automatic uncapping knife invented by Count Zorzi. It is composed of a blade mounted on a pivot and put in motion horizontally by a cog wheel arrangement moved by a handle. To uncap the combs, they are placed up against the blade, so that as it moves it uncaps.

The jury tested its merits in action, and awarded it a gold medal, and stated that it worked well and was capable of doing good service. To large producers of honey who do not hesitate to spend money to buy time- and labor-saving machinery this may be of importance.

Mr. Tartuferi the owner of 1000 hives and the largest honey producer in Italy expressed himself as greatly pleased at its workings.

While Mr. Bertrand and Mr. Cowan were in Italy they visited several of the noted queen breeders especially those in the region of Bellinzona. Among others they visited Mr. Pometta, a breeder known to many in the U. S. A. Mr. Bertrand in his Journal makes certain remarks upon the yellow band of the Italian bees, their number etc., that I think are important for my readers to see.

Mr. Bertrand writes:

"It is well known that all the bees of the Italian race have not got the three yellow bands of the abdomen equally distinctly marked. This I have substantiated on several different journeys.

At Ornavasso, at Golasecca, and at Milan there are colonies only showing *two* bands. In 1881 at Milan, at the Sartori establishment, I saw drones as destitute of any yellow bands as any drones bred by our black bees. But abroad, three bright yellow bands are considered an indispensable sign of purity, hence the reason why Italian breeders, while attaching no real value in work to the color of the rings, endeavor to have no bees in their apiaries that will not show three bright bands."

It may interest readers to know the opinion held abroad upon the value of the Cyprian Bee. I therefore give you what Monsieur Maurice Bellot, one of the most careful and observant bee men I know, in France, says of that race.

For several years he kept Cyprian bees obtained through Mr. Fiorini in Italy, and of them he says, "I can certify that they have always given me a greater return than the Italians and what is more than that they are just as gentle."

Later on he got Mr. Benton to send him queens direct from Cyprus and having carefully worked with them he writes:

"I believe myself authorized, by my own experiences to say with Mr. Benton that the Cyprian bee is certainly the most beautiful in the world

the most productive, and winters in my locality the best. It is not excessively wicked, although at times it requires a little more smoke to master, than other bees, especially when the weather is bad."

INVERTIBLE HIVES.

By S. Morrett.

I see in J. M. Shucks' article under the above head that to invert a hive five days after queen cells are started, the bees will destroy them. It seems to me this is an important discovery. To such as do not want any increase this may be of great benefit. It seems to me this is not only good to prevent after swarms, but to prevent any increase. Why not when a swarm issues, reverse the frames, and return the swarm, and give plenty surplus room; the queen would soon have plenty of room in the brood chamber, and I think would be satisfied to stay at home. Who will try it and report? If all of us beekeepers who have hard work to sell our surplus bees at two or three dollars, for first swarms, would stop all increase after we have the number we want to take care of, beekeeping would be more profitable to us; for many of those whom we persuade to buy swarms of us, after they get a few pounds of honey to spare, will go to our market place, and sell it from one to eight cents per pound more than we have been getting. This causes trouble; I for one am very anxious for a good simple plan to prevent increase of colonies.

Silver Lake, Ind.

RACES: HYBRIDS: EXPERIMENTS.

By A. Norton.

It is almost superfluous to say that the question of the relative value of the various races of bees and of their crosses is a vexed one. Individual experiences differ so widely, conditions that modify experience are so varied, and worst of all, superficial judgment and hasty trial are so often palmed off as experience, that we can hear almost anything we want, and as much more that we don't want concerning it.

One writer, with several seasons' trial of Italians and none other, considers them better than other races he has not tried. Another launches out in the Syrian direction; and, without systematic comparison, proclaims them superior to all others. I, with a single season's trial of the Cyprians, am decidedly in their favor; but, were I immediately to proclaim this superficial preference, another season's experience might force me to eat crow. Now, why do pure bloods and hybrids of all kinds find their respective enthusiasts to admire and defend?

It may be answered 1st, because results differ from season to season without apparent cause; and the colony that excelled all others in your yard last year will next season fall behind many of the stocks that before did poorly; 2d, because external conditions, those modifiers and complicators of all circumstances, may favor one race here and another there; 3d, because hasty observations inspire more theories than do careful ones; and 4th, because selfish interests often move us, and there are so many of us. It is not my purpose to enter into the discussion of respective merits, nor to uphold the claims of any race. While I have had experience with four races and four kinds of hybrids, it has not been of a nature to enable me to judge completely which is the best one. Though favorably disposed toward the Cyprians, and inclined to think that they do not receive the credit they deserve, I do not propose to urge anyone to give them credit nor even trial. But in regard to crosses, I cannot help say-

ing, theoretically, however, that we should be careful in our assertions of their superiority, for nature seems almost to abhor hybrids.

This is the result of all scientific study. Species are removed from each other beyond the limits of possibility to intercross. To this rule it is true there are some exceptions.

Botanical geography and systematic botany show us that where species branch off into those permanent sports called varieties, there may be intermediate forms in intermediate localities; but that these latter tend to die out, while the species and its variety, or the two varieties, as the case may be, extend their limits toward each other, crowding out the connecting links and remaining distinct, though finally growing side by side or at least, in close proximity to each other. In stock-breeding as in poultry-raising for example, crosses are not as a rule considered best. In my limited experience, out of the crossing of several varieties of fowls, only one cross was superior to the pure breeds, and this only partially so. And it is an established principle, that with hybrid breeding-stock, the progeny deteriorate, generation by generation. Hence the instances of successful permanent crosses are more rare than are those where the first crosses are superior to pure stock.

Those who advocate the crossing of races "to combine their desirable qualities," do not seem to take into consideration the combining of their undesirable points.

The principle of selection applied to existing and regular forms is Nature's basis and the true basis, for the establishment of varieties, races or species, and for improving upon the same.

I do not rise up to say that hybrid races of bees are not superior; but, in the light of general facts, I do not see how they should be. The trial which I propose might go far toward establishing some reliable basis of belief. It is as follows: Let all beekeepers who will, and the more the better, take queens and bees of as many races and hybrids as they can procure. Weigh the bees and be sure that all stocks are of equal weight. Place them all on the same day, in the early part of the season, in hives containing precisely equal amounts of comb-foundation and empty space. If it be necessary to add bees to any stock to complete the weight, cage the queen for a short time thereafter. A few frames should be filled with foundation, to give the bees a start, and others should be left with only starters, as tests of comb-building. Whatever treatment is given should be just the same for all. Now take careful note of the progress of each colony as follows:—Date of drawing out foundation; date of filling empty frames with comb; respective weights at different dates: date and number of swarms; amount of surplus; peculiar conditions, natural or accidental, internal or external, that might influence the result. Such a trial on the part of one person would be of limited value; but, if carried on by many persons in many places, their reports to the "Apiculturist" would form an aggregate whose reliability would be great indeed.

Gonzales, Cal.

INTRODUCING QUEENS.

By D. F. Savage.

In "Api" for Oct. you request "those who have purchased queens from the Apiculturist Bee Farm, and introduced successfully" to give their method for publication.

June 25, I received queen as above, all right, having been in the mail bags three days and travelled hundreds of miles.

At one o'clock I went to a popu-

lous hive, found frame with their queen, and set it aside in an empty hive. Then taking three frames of brood well covered with bees and well filled with honey, I shook them down into a box prepared with wire bottom and top, movable, and a three-fourth inch hole in the side stopped with a cork, bees shaken down and covered, before they had time to run up to the top and very few flew off. Box then set in a cool dark place, the three frames with some bees adhering either return to hive or go to some nucleus, queen on her frame replaced, and all soon quiet there.

Great tumult among the imprisoned bees.

About four o'clock, I take the queen *alone* in round wire cage with cork in one end, let her in with the imprisoned bees first dumping the box hard on the ground and while they are streaming wildly round and round, the wire cage is applied to the hole; the queen now lonesome hears the roar, skips in at once. Through the wire top I have the satisfaction of seeing how she sails into the rapid current, not one of the throng turning her head to say "Who are you, where did you come from?" Box, then covered with cloth over the wire and left all night. Next morning, 26th, I prepared a hive with combs of brood, no bees,—and put in new place. Bees in the box are found clustered neatly in one corner. I shake them down to the prepared hive into which they run far more promptly than any natural swarm would do. Three days after put in an empty comb, and the following day removed it with fine lot of eggs for raising queens *a la* Alley. From time to time added frames of brood, the queen doing her duty bountifully from the first to build up the colony.

This method is not original with me and doubtless many of your patrons may have practised the same. For myself, having seen it recommended by a prominent beekeeper I tried it without misgiving, and found it successful first, and every time. Those who have tried this method, in the spirit of it, will agree with me, I think, that it is a very neat, sure and speedy plan of establishing a valuable queen, that may have journeyed far, as mistress of a happy and busy family, capable at once of in-door and out-door industry.

The essential points seem to be, to secure bees well fed from one or more frames, of a hive where there is a laying queen, in the middle of the day, and when they have been secluded about three hours any *fertile* queen will be received, and soon becoming quiet and remaining all night, will in the morning promptly occupy any hive with brood combs and stay where they are put. Size of box is not essential. Alley's swarming box is just the thing. The brood combs from which the bees were shaken may be put away for them to occupy on the morrow, in which case every bee should be brushed off, then if any bees hatched during the night they will not make any trouble with the entering swarm, but form useful members of the commonwealth.

Few will have occasion to introduce any queens now but doubtless some will "make a note of it" and try this plan next season.

Casky, Ky., Oct. 21, 1885.

BEE CULTURE IN THE SOUTH.

By G. W. Demaree.

The winter here was very favorable up to Jan. 8 and previous to that date our bees were flying in the open air almost daily. Sometimes a dark, cloudy spell would confine them to

the hives three or four days at a time and then they would be out again. The great snowstorm reached us on the afternoon of Jan. 8 and it turned wonderfully cold for this climate. From Jan. 9 to Jan. 12 the mercury never rose above zero, an experience altogether new to me. The lowest dip was 16° below zero. Well, on Jan. 14, or the sixth day of the cold snap, the sun shone out brightly and warmed up the south side of some of the hives which are painted with ochre, and the bees began to stir at the entrances of the hive and some of them took wing to meet a breeze too sharp for bees to endure and live a great while.

The fall before I had fed several colonies with pure sugar syrup, putting the bees on clean combs and had treated several colonies the same way, feeding them with extracted honey diluted with warm water. One colony was fed on sorghum syrup, as much as I could induce them to take as they were very reluctant to store it. They seemed willing to fuss with it, but they evidently cared little about risking it for winter stores. Of course I took a lively interest in seeing what would be the effect of such continued low temperature on the bees in their several differing conditions as to their winter stores. To my surprise, the bees which had fed on natural stores and even the colony that had been fed sorghum syrup, looked all right as to color and size; but the bees that fed solely on pure sugar syrup, a limited number of them, were the worst bloated bees I have ever had the *pleasure* to see. Some of the bees dragged themselves out of the hive so full that they were helpless, so far as taking wing is concerned. I gathered up some of these bloated bees and took them to my office and emptied the contents of their bodies on a sheet of white paper. The amount taken from an individual bee was perhaps twice as much as the bee could carry in the ordinary way. To all appearances, as to color and consistency, and in every respect, except as to sweetness, the fluid taken from the bodies of these bees was identical with the sugar syrup as I fed it to the bees in the fall. This fluid was put under a glass of pretty considerable powers without revealing the presence of anything more than might be seen in ordinary syrup. Now here was a plain case of bee diarrhœa so far as the distension of the abdomen of the bee was concerned. A short time afterwards, there came a warm day and a general flight of the bees left them in good condition. These bees were in single wall hives and without any packing of any kind. A few colonies starved because of the scattered condition of their stores in the hives, being unable to move during the bitter cold weather.

I am now convinced that sugar syrup is inferior to honey for winter stores in this climate, and I want to enter my protest here against the wholesale sugar-feeding going on in the apiaries of the country. This sugar feeding is rapidly undermining the honey trade. Beekeepers merely indulging their own convenience may shut their eyes to the facts, but the trouble of the honey market is lack of confidence in modern honey. A man visited my apiary not long since, who had taken a fancy to bees but was utterly ignorant of modern bee culture. He told me of a man in Indiana who keeps his bees in a winter repository or bee-house and that, by furnishing them with sugar he kept his bees "making honey" all winter.

I knew this man was spreading this false story, and ignorantly doing it, so I took all the pains I could to convince him that the Indiana beekeeper was only feeding his bees on sugar syrup to keep them from starving till the spring bloom would give them a living. But this was taking the romance out of his story and for

that reason, or for the more potent reason that a lie will travel a mile before truth can don its boots, he could not be induced to give it up. What does the world about us know about "feeding bees?" If they hear of a man feeding bees they take it at once that he is "manufacturing honey." Say what you will, the great mass of consumers have no faith in modern honey, and the fault is all our own. We must stop the sugar business and supply the wants of our bees with pure honey. We have been told lately that we must educate the people on the subject of pure honey so that feeding sugar to winter bees will not excite their suspicions. Well, now I say that it can't be done; you may explain to the average consumer once a week the year round what you feed your bees for, and how you feed them, and he will ask you every time if you feed them to "make honey," or some like question that will convince you that your labor has all been in vain.

Now I am going to say what I would rather not say, but truth demands it. In my own locality, being well known, I can sell honey largely the year round; but I could not sell a pound of honey if my customers knew that it was not produced in my own apiary. This simple, hard fact is the best possible illustration of the lack of confidence in modern honey. I, myself, would not buy honey from a man who feeds largely on sugar syrup because, no matter how honest he might be, he could not warrant his honey to be absolutely pure. To say that a little sugar carried by the bees into the surplus does not hurt the honey, does not mend the matter. To sell a *mixed article* for a *pure article* is a fraud, necessarily so. Let us take out of the way all the hindrances.

Christiansburg, Ky.

EDITORIAL NOTES.

DOES IT PAY TO KEEP BEES AS A BUSINESS?

This question has not received proper attention. If called upon to decide we should certainly say that, as a rule, it does not pay to keep bees as a business. The keeping of bees should be connected with some other vocation, as but few men are adapted to handle a large apiary; and, again, there are but few localities where forage is sufficiently abundant to keep bees in large numbers.

It is our opinion that farmers, mechanics and most laboring men can make beekeeping profitable by keeping only such a number of colonies as they can care for during the few hours they could devote to such work each day. Most any mechanic would find time to manage from twenty to thirty colonies, as the days are the longest at the time the bees would need the most attention, and the hours the mechanic could spare is the best part of the day for doing work in the apiary.

The farmer could raise honey and wax and take them to market with the other products of the farm. The mechanic could sell his honey to his fellow-workman, friends and neighbors, and he would find that even though he raised but a few hundred pounds of honey each season, the money realized therefrom would be of great help to himself and family.

The laboring man who has no income except what he obtains by hard work is indeed in "hard luck." To those who can do so, we advise the keeping of a few colonies of bees, raise honey for your own table, and also get the needed recreation and pleasure so much desired by all.

During the long winter evenings the sections could be nailed, the hives "put up," and every preparation made for taking the crop of honey the coming season. Except in swarming time bees need little or

no attention, and most any mechanic would have no trouble in managing several colonies of bees. Considering the little capital that need be invested, and the time required to care for a small apiary, we should say that the small beekeeper would realize the largest profit.

"THE DRONE BEE."

We saw it stated in a recent number of the *Am. Bee Journal* that more importance should be given by queen breeders and honey producers to rearing and selecting the drone bee. We have often urged the queen dealer as well as the honey producer, to use more care in the selection of drones, and have stated that the qualities, good or bad, and the peculiarities of any colony of bees are more likely to be transmitted to the offspring by the drone than by the queen bee. Hence it will be seen that if a particular colony possesses any desirable quality one wishes to preserve, he should see that his queens are mated to the drones of the colony possessing such qualities. For instance: suppose there is one colony in the apiary possessing the three good points, docility, good honey gatherers and non-swarming, and another colony whose bees are strong, hardy and winter well. Now these are all desirable points and it would be hard to tell which colony possessed the best. Well, instead of having the young queens mated haphazard, that is, by any drone in the apiary, why not rear queens from the one colony and mate them with drones from the other? By using a proper drone trap such things are easily managed.

Breed out all the bad qualities, and the result will be better bees, more honey and larger profits.

— The use of veils by beekeepers should be avoided as much as possible, as the constant strain upon the eyes in looking through the fine meshes of either cloth or wire netting is very injurious. Every beekeeper, however, should have something of the kind about the apiary to protect his friends and visitors from stings. With a good smoker no one need be badly stung, even when handling the most vicious colony of bees.

— There is no doubt that salt is needed by bees. We have no idea as to the quantity a colony would consume, or exactly for what purpose it is used. We have visited the apiary of the old-fashioned beekeeper, and have often seen salt at the entrance of the hives. Now, this is an old custom but a very good one. As salt cannot do any harm, why not place it where they can have easy access to it?

— Mr. R. Wilkins of California has reaped 100,000 lbs. of honey from 1000 stands of bees. Mr. Wilkins formerly kept bees in Cadiz, Ohio, but removed from that state to California, about ten years ago, to engage more largely in bee culture. The above figures would seem to indicate that he has made a success of it.

— A few days ago, we heard a person say that counterfeit honey was manufactured and sold for "pure bees" honey. We inquired of the party who made the statement, where some of the manufactured article could be obtained. He did not know, but was sure it was being made as he had seen some of the honey. We offered $10 for one pound of it. Will any one send us that amount for examination?

—Some time in January, a party was shipping several hundred colonies of bees to some southern state, when by an accident, about two hundred of the hives were destroyed by fire. We were thinking, when we read the item, how much better off some one hundred beekeepers throughout the country would now be, had such a mishap occurred to the same party about four years ago. We always believe and recommend cremation as the best means for exterminating foul brood.

—Our friends who write articles for the "Apiculturist" will please use but one side of the paper. Be careful, also, not to mix business matters with articles intended for publication. We cannot use them when thus written, as we file all business letters for future reference.

—The reader's attention is called to our price list of apiarian supplies on the last pages of this number of the "Apiculturist."

—We invite all who receive this number of the "Api" to read and examine its contents carefully. We feel quite sure that many will agree with us in the opinion that no one copy of any bee journal yet sent out contains a greater variety or an equal amount of valuable information concerning bee culture.

APICULTURIST BEE FARM NOTES.

PERFORATED ZINC AND SOME OF ITS USES.

Of the new appliances for managing the apiary there is no one article so handy and useful as perforated zinc. The average beekeeper does not seem to realize the many uses to which this article can be applied.

DRONE EXCLUDERS.

They were first used at the entrance of hives to exclude drones, but did not work satisfactorily, and instead of excluding them from the hive "detained" them. The only way to exclude drones by this arrangement, is for the apiarist to watch his hives, and when the drones are trying to go out, remove the zinc, and almost immediately replace it, so that none can enter on their return, which they will attempt to do after they have had a good frolic and work equally as hard to enter the hive as they did to leave it. The next thing to be done is to kill each particular drone, as there is no other way to destroy them. Under such circumstances such a drone excluder is worthless. A good drone trap needs no watching; it not only excludes all the drones from the hive but it catches and destroys them at the same time. Not only does it do this, but it catches the queen in swarming time. As to how it works in such cases, the reader is referred to the excellent article of Mrs. Sherman on page 54.

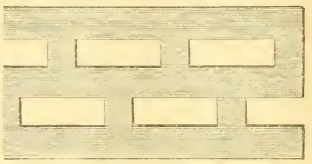

FIG. 1. Perforated zinc for drone excluders.

Fig. 1 represents the proper perforations to be used for drone traps. No drones can pass through this zinc, but a queen can do so after she has tried for five or six hours to work her body through, as the hair on the thorax is worn off by coming in contact with the sharp edges of the metal.

QUEEN EXCLUDING HONEYBOARDS.

Another purpose to which perforated zinc is applied is to prevent the queen entering the sections and depositing drone eggs there. She is sure to do so unless prevented; especially is this the case when there is not sufficient room in the brood-chamber for rearing drones. In many cases it will make no difference whether the sections are filled with worker foundations or not, the bees would remove it and construct drone cells in place of it. No arrangement has as yet been devised for preventing the rearing of drone bees (something interesting on this point may be found in the "question and answer" department), hence the importance of some arrangement for excluding the queen from the sections.

PERFORATED ZINC DIVISION BOARDS.

Although we have not practised it to any great extent here, some bee-

keepers make and use a zinc division board and confine the queen on three or four brood combs during the honey harvest, thus preventing brood-rearing. As there will be but little brood in the hive to feed and nurse, more bees can give their attention to comb building and to gathering honey. In our opinion but little is gained by such an operation.

PERFORATED ZINC FOR MAILING CAGES.

A few years ago we received several valuable queens in some large mailing cages. Each cage had in it twenty-five worker bees besides the queen. We had no colonies prepared for the reception of the queens when they came, and as the bees seemed to be suffering for a flight, owing to their long confinement, we drew out the tin slide to the cage, and put a piece of perforated zinc over the opening and placed the cage on the

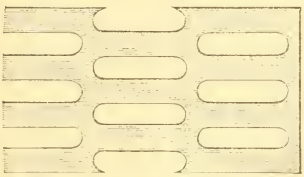

FIG. 2. Perforated zinc for queen guards.

window stool. In a few moments all the bees had taken a flight and returned to the cage again. By such treatment we could have kept the bees in the cages several weeks.

Those who purchase queens reared at the "Apiculturist Bee Farm" will, if they request it, receive a small piece of zinc with each queen. Perhaps we may arrange our shipping cages so that the bees accompanying the queen may take a flight, unless the queen is to be immediately introduced.

A ZINC QUEEN GUARD.

As we have stated, our queens used as "breeders" are kept in small hives, before described. When forage is scarce, such miniature colonies will "swarm out," that is, the bees will desert the hive. To prevent this we place at the entrance of each hive a queen guard, similar to the "Jones' bee guard." We have seen such small colonies swarm, but as the queen could not leave, the bees would soon return and settle down to business again, as though nothing unusual had happened.

The proper zinc to be used for such a purpose is the same described, in the "Beekeepers' Handy Book," as Root's perforated zinc, and is illustrated in Fig. 2.

THE LOCKE PERFECTION FEEDER.

We do not approve of feeding bees in the winter, but when it is necessary to do so, there is no better feeder for the purpose than the one devised by Mr. Locke. As we have sold a large number of these feeders mainly to the readers of the "Apiculturist," directions are given for using them in winter.

To feed bees after they have been placed in winter quarters proceed thus: have at hand some fresh syrup made of granulated sugar and water, say, two parts sugar, one part water; fill the feeder and place it under the chaff cushion, or cover it (as well as the top of the frames) with some woollen material to keep the bees as warm as possible. The colony being fed should be placed in the cellar, bee house or in some place where the temperature is about 45°. Bees being fed in winter should be given an opportunity to take a flight as often as the weather is sufficiently warm for them to do so.

QUESTIONS AND ANSWERS.

QUESTIONS BY "OLD BEEKEEPER."

1. Suppose some colonies come through the winter strong in numbers, but the combs are badly damaged by

mould. How would you treat such colonies, in order to save the bees, if the weather was not warm enough for them to take a flight?

2. How would you treat such combs in case only the lower portion of each one was damaged? If the mouldy part is removed and the vacant place not filled with other comb or foundation, would not the bees utilize such places for rearing drone brood?

3. Do you think that drone-rearing can be wholly prevented by removing all the drone comb from a hive and substituting foundation or worker comb in its place? Have you ever tested the matter?

4. Is it advisable to prevent the rearing of all drones when not needed?

QUESTIONS BY R. D. AVERY.

1. What is the best and quickest way to Italianize twenty-five or thirty colonies of native bees?

2. What advantage do the Carniolans possess over the Italians, and their drawbacks?

ANSWERS BY WILL. M. KELLOGG.

1. If a stock comes through strong in bees, they will take care of themselves till a day *does* come warm enough for them to fly. They will be better off let alone, at any rate, till a warm spell does come. Then take a clean hive, change over such combs as have brood in them with the adhering bees carefully brushing dead bees and filth from the bottom part of comb as far up as the bees will admit; shake the bees off of the remaining combs and place them where they will get dry, either out in the sun or in a warm room. When dry, use a whisk broom and brush off all the mould, etc., that you can. Take the chance to sort the combs, cut out all the drone and poor comb. If the stock is strong put the combs with the others which the bees already have, they will clean them up; a clean hive seems to encourage them. If the stock be light give them clean combs from some other, giving the mouldy combs among clean, strong stocks.

2. It depends on how badly damaged they were, or how good, as combs. Clean worker-comb (aside from the mould) I would keep, and cut out drone comb and take the chances of its being replaced with worker-comb; even if drone comb be built it will be new and clean, and the chances are greatly in favor of its being worker comb.

3. No. I have many times seen drones raised in worker cells, both by queens and fertile workers. Of course they were small but I suppose they were drones capable of fertilizing a queen, though I never had a chance to know for sure. Have tested it many times and the result was almost total lack of drones in those stocks; it was done in trying to restrict drones to my pure Italian stocks.

4. Never having it proven that drones were of any use except for procreation, I would most assuredly say yes.

ANSWERS TO R. D. AVERY.

1. For myself, I would buy twenty-five or thirty tested, warranted, Italian queens from a reliable breeder and replace the black queens with them. I would buy in preference to raising, for I consider that successful queen-rearing can best be carried on by those well fitted for it and the money saved by raising at home, can be fully over-balanced by the honey received from stocks kept strong, to say nothing of the vexation, loss, and time taken. Of course I raise my own queens, but I am talking now of pure Italians. I would change queens when only a moderate flow of honey was coming, say August or September.

2. I have had no experience except with natives and Italians.

Oneida, Ill.

ANSWERS BY J. E. POND, JR.

1. I should let them alone till weather was warm enough. It would hardly be possible for such a state of things to exist. On the first day when warm enough to do so safely, I should remove the combs, clear out the hives and contract space so that the bees would be crowded somewhat, giving the best combs found; the others I should wash clean, dry out, and use as needed.

2. I should brush the mould off simply unless the combs were excessively moist. Much depends in the matter of bees building drone cells. Sometimes they will, and sometimes not. If I cut out any comb I should replace with worker foundation, or comb if I had it.

3. It is impossible to prevent drone rearing in its season. I always allow a small amount of drone comb in all my hives, if I do not find that nature asserts itself by rearing drones in worker cells and such drones are smaller than I like, although I have no positive proof that they are any less effective than those reared in regular

drone cells. I have tested the matter time and time again of giving a colony comb in which not even a single drone cell could be found. Drones, however, would be reared, and I have found them many times in sections filled with drone comb, when there was a large quantity of empty worker cells in brood chamber.

4. I do not think it advisable to attempt to prevent absolutely the rearing of drones at any time. My plan is to allow each colony a chance to rear a few, and I find by so doing the desire to rear a large number is greatly suppressed; a few drone cells seems to satisfy the bees, while complete absence of them seems to cause a determination on their part to rear a big lot anyhow.

ANSWERS TO R. D. AVERY.

1. Purchase queens in May or June and introduce them at once.

Unless intending to rear queens for sale, my advice would be to buy dollar queens from some reliable breeder. 95 per cent will be found purely mated and the balance can easily be replaced, when it is found by their worker progeny, that they are hybrids.

2. I don't think Carniolans possess any advantages over Italians. The drawback is that they are excessively inclined to swarm, and as yet it has been found impossible to prevent it. The great point claimed for them is their amiability, but pure Italians will be found amiable enough for most beekeepers, and those who are terribly afraid of being stung should not keep bees, or else should wear a complete coat of mail.

ANSWERS BY L. C. ROOT.

1. I would leave them undisturbed until the weather was warm enough for them to fly. They will then remove the mould.

2. If I removed the lower part of the combs I would fill the place of that taken with other worker comb, even if to do so I had to reduce the number of combs and supply frames of foundation later.

3. Nearly, if not quite so. If a few drone cells are constructed the drones may be destroyed before they hatch.

I have had experience in preventing drones from hatching in all hives, except such as were selected for the purpose. One will succeed if thorough in the work.

4. I think it is always desirable to have an abundance of choice drones in every apiary during the season when any queen may fly to meet them.

I am not certain that drones in every stock are beneficial.

If I were, I should supply them by taking brood from superior stocks selected for the purpose.

If we are to improve our bees care must be taken in selecting stock for the drones as well as on the side of the mother.

We must avoid in-breeding.

ANSWERS TO R. D. AVERY.

1. If you have not had experience, order queens from some reliable breeder. See Alley's Handy Book for methods of rearing queens and Italianizing.

2. I do not know.

ANSWERS BY IRA BARBER.

1. If a colony comes out of winter quarters strong with bees and combs mouldy, I should let the bees clean them up themselves, when there was nothing else for them to do.

2. If corners of combs are cut out for any cause and not replaced with worker comb, they are quite certain to fill in with drone comb,

3. I do not think any man can prevent bees from rearing drones with foundation, for they will have some if they have to lengthen out worker cell. to get them. This is my experiences.

4. I think not.

ANSWERS TO R. D. AVERY.

1. Purchase queens of some reliable queen rearer and introduce when time and condition of bees are most favorable.

2. Have had no experience with Carniolans and cannot speak for or against them.

ANSWERS BY G. L. TINKER.

1. To remedy the difficulty here named I would do two things before I ever come to the matter of mouldy combs. Whether wintering out or in doors I would give the colonies large lower ventilation and in early winter at least, or until about February 15, shut off every particle of top ventilation except what might be secured through the pores of the wood, and thereby prevent the cause of mouldy combs. If I wintered in the cellar I would keep the temperature under full

control at 40° to 43° and never let it run below 35° and thus prevent the condensation of moisture on the combs which is the first cause of mould. The badly moulded comb had better be cut out, and clean worker combs inserted.

2. The bees are most certain to build drone comb in place of comb cut out in the spring of the year.

3. No; and I have tested the matter.

4. No; we think from one to two hundred drones in proper season are an advantage to a colony.

ANSWERS TO R. D. AVERY.

1. Buy twenty-five or thirty pure Italian queens of some reputable dealer and introduce them.

2. We have had no experiences with the Carniolans but crosses with Syrians and Italians have proved to be very promising.

ANSWERS BY HENRY ALLEY.

1. As soon as the bees have had one good flight, they should be taken into a warm room, and all the mouldy combs, except those having brood in them, removed. If possible, place two combs of honey in the brood-nest. Cover up warm with a quilt, and all will be O. K. in a few days.

2. Replace the comb removed by worker-comb. It is quite a fussy job to do it with foundation. Unless replaced, the vacant place will be filled with drone-comb.

3. No. There is no way to prevent the rearing of drones, unless the hives are opened as often as once in three weeks, and the cap to every drone cell shaved off. Who would undertake to do such a thing? We have not tested the matter of preventing "drone rearing," but how to prevent drones from flying or *leaving* the hive at all, we have thoroughly tested and can catch and destroy every drone that attempts to leave the hive.

4. We think every colony should have a few drones at the time when the bees seem to need them.

ANSWERS TO R. D. AVERY.

1. Purchase queens of the best known dealers.

2. The Carniolans possess no advantage over the Italians. Their "drawbacks" are just what every bee-keeper does not desire. They swarm themselves to death.

A BUNDLE OF INQUIRIES.

QUESTION BY J. C. STEWART.

I am a long-backed fellow and stooping over fifty colonies last summer nearly ruined my back. I would like some plan of putting my hives up from the ground so I can stand. Shall I lose honey and bees by it? Use chaff hives. I like the "Apiculturist" very much. Am going to use Alley on Queens next season. Season good. Lost ten per cent last winter. With no chaff fifty per cent loss.

Hopkins, Mo.

ANSWER.

We advise placing the bees about three feet above the ground, or at such a height that but little stooping will be necessary. No bees of any account would be lost. Rev. Mr. Marsh, of Georgetown, Mass., places his hives about five feet above the ground. This we consider too high for easy management. A good plan for a stand would be to drive two stakes into the ground and place the hive between them, letting it rest on cleats nailed to the sides of the hive. Another plan is this: set a post in the ground; nail a board firmly to the top and place the hive thereon. Hives placed at such a distance from the ground should be firmly secured, or one of those western cyclones would make sad havoc in a few moments in the apiary.

QUESTIONS BY F. F. GRAVES.

I am making 2,000 standard L. frames. Is it advisable to make all or only a part of them reversible? What is the most practical appliance yet invented for reversing frames?

Waterville, Me.

ANSWERS.

1. This is a question we cannot decide. If one is intending to ship bees the frames should be made reversible. We think there is some better way for reversing combs than by the single frame principle. Mr. John M. Price, James Heddon and J. M. Schuck have devised hives by which all the combs can be reversed at one motion. As to the practicability of such an arrangement time and experience must decide.

There is no doubt that by frequently reversing the combs (say once each three days) swarming can be prevented. Mr. Schuck advanced a brilliant idea when he mentioned the fact in his circular that the invertible hive

possessed this particular advantage over other hives in use.

QUESTION BY W. M. MATTA.

Will bees smother if the entrance to the hive is blocked with snow?

Dedham, Mass.

ANSWER.

Bees would certainly smother or die, unless fresh air is admitted to the hive. The snow would have to be packed very hard about the hive to exclude all the air. Bees require but little air in winter, but if all ventilation is shut out the combs would mould badly. Not only should the entrance to the hive be kept clear, but no snow should be packed against the hives at all, especially against single walled-hives, as during zero weather the frost would penetrate nearly to the centre of the brood-nest and destroy the bees. This fact we learned from experience a good many years ago.

QUESTIONS BY ADAM BAKER.

MR. EDITOR:

I want to ask through the "Apiculturist" what the bees do with the pollen they carry with them when they swarm?

Bee men say that hives should be set near the ground. If this is true, why do bees go high up in trees? I helped to cut three last fall, the lowest about 50 feet, the highest 150 feet. Why did they not go in near the ground? there are more hollow trees near the ground than high up. I want bee men to answer this question as some may doubt about the height of the trees. We live in Washington Territory where trees grow high.

Old Tacoma, W. T.

ANSWERS.

1. The pollen which the bees have on their legs at the time of swarming is used for no particular purpose, and is lost unless the bees are put in a hive having some empty combs. When a colony swarms, there are new bees in the parent hive that have just returned from the field, and before they have a chance to unload the pollen they are forced to join the new swarm. Then again the bees returning from the field join the new swarm and take their loads of honey and pollen with them. The old-fashion beekeeper used to say "the bees are making comb, I saw them carrying in wax on their legs." They were people who did not read bee books or a good bee journal.

2. Hives should not be set so near the ground that the "long back fellow" will hurt his spine in handling the bees. Eighteen or twenty inches is sufficiently high above the ground to set the hives as a rule.

Bees are pretty apt to be high-minded when in search of a new home; we have found them located very near the ground and others very high up. A "runaway" swarm is not particular about the height; it will generally select a clean, dry place for the new location.

QUESTIONS BY SERENO EDWARDS TODD.

I have seen it stated, several times recently, that honey bees, on Long Island, gather poisonous honey from a plant called "kill calf," and store it up with honey that is not poisonous. It was stated also, that the honey industry, on Long Island, has been nearly ruined by the poisonous honey thus gathered and stored. Since seeing the above statements, I have conferred with several of my friends who keep bees, some of whom do not think that bees ever gather poisonous honey, while others have an "opinion" that they *do*. My own *opinion* is that the honey found by bees in poisonous plants, is not poisonous; and consequently, could not poison good honey. Now, I desire to present a few inquiries to be answered by any one who can reply from positive knowledge. We all have a superabundance of knowledge predicated simply on *opinions*. We want un-get-roundable facts.

1. Do honey-bees ever store up poisonous honey?

Ans. We do not believe the bees gather poisonous honey. To many people the best and purest honey is a rank poison.

2. What plants furnish poisonous honey?

3. How may a novice determine for a certainty, that honey bees do

gather honey from any poisonous plants?

4. How may any one determine whether honey is at all poisonous, without first eating some of it, thus jeopardizing his life?

Ans. To the 2nd, 3rd and 4th questions we can make no reply, and do not think any one can be found who can give the desired information to such questions.

5. Admitting that certain plants do yield poisonous honey, would it not poison the bees when they collect it, or whenever they might eat any of it?

Ans. If bees gathered poisonous honey, it would without doubt kill them, more especially the immature brood; therefore, this fact alone is sufficient proof that bees do not gather poisonous honey.

Orange, N. J.

QUESTIONS BY R. F. HOLTERMAN.

Speaking from actual experience is it injurious or beneficial to stimulate by feeding two or three ounces of sugar syrup per day to a colony before they are able to fly regularly. What is the opinion?

How long before the bees take their last fly in the fall should all stimulative feeding cease? Why? Is the decision from discussion or is it the result of experience?

Ans. Bees should not be fed nor disturbed at all until the season is so far advanced that they can take a flight two or three times a week.

The proper time to feed to promote brood-rearing is when the bees begin to gather pollen. The fact that the bees are gathering pollen indicates their readiness to commence the season's work. A few ounces of syrup fed to a colony each day will be beneficial.

Feeding late in the fall would certainly be very injurious. It never should be attempted to promote brood-rearing later than Sept. 20. If any of the syrup fed in the fall is left unsealed, it would certainly sour before spring, and the result would be disastrous to the colony. These answers are not guesses, but actual facts gained from experience.

LETTER BOX.

MR. EDITOR:

What causes our bees to die in the winter? I have kept bees some thirty-five years most of the time. Now, years ago we kept them in a thin single hive or in a half barrel. I have known them to winter in a nail cask, and in cold bleak places out of doors and lost but a few bees. It was supposed that bees would not freeze. Now we have double hives, and down here in Maine we sometimes pack outside of that, but still we lose in the winter at least two colonies where we lost one fifty years ago; and when they have a plenty of honey. There must be a cause, and if there is a cause what is it, and what is the remedy? Now we have lots of science given us in regard to beekeeping. A. J. Cook gives us lots of it and he has a good chance to apply it to beekeeping; but still the bees die in the winter. I think we want more of the practical with the scientific. Again is the honey gathered by bees now the same that it was when the country was new? They tell me that bees do not winter-kill in new territory, as far north as Maine.

Will some one give us the facts? Will some of the scientific ones, Mr. Cook for instance, tell us if the honey has changed, chemically? Science tells us that when honey candies it forms grape sugar, and science says it contains sulphuric acid. Is there more of it in honey gathered in old territory than there is in new territory and will the acid kill bees?

BEEKEEPER.

Respectfully referred to Prof. Cook.

MR. EDITOR:

Has Mr. G. W. Demaree stole my frame or have I stole his? I made in the winter of 1885, a frame just like the one he describes with this difference; my slotted bar is one and one-half inch wide, the other parts of frame are one inch wide; my comb bar is split in the middle. In setting up I

put in one-half of the comb bar and when I put in foundation I put in the other half and tack one to the other; this holds the foundation well, and is done quickly.

I am wintering one swarm on that frame this winter and I will give you the result in April if you desire it.

W. H. WATSON, *Waterville, Me.*

Wellesley Hills, Mass.

EDITOR OF THE AM. APICULTURIST:

I should like to ask of the bee fraternity to give through this journal their idea of the method to pursue to realize the most comb honey from a colony—said colony not to be allowed to swarm naturally, and their method to prevent them swarming naturally. I am away from home all day except Sundays and I must prevent natural swarming—I would also ask if there is not some way to prevent the bees from sticking the brood frames, honey board, and section cases so *solidly* together—it is such a job to open my hives that it maddens the bees so that smoke has little effect upon them.

Did any one ever try covering the top side, of the top bars, of the brood frames, and top edges of hive, and top and bottom edges of section case where they join together in tiering up—with strips of enamel cloth, *folded* in such a way as to prevent the bees getting at the cut edges of the cloth—presenting to the bees inside the hive a folded edge of enamel cloth to which to glue the wood joints. If so, please report, if not I shall try next season and I'll report. CALVIN W. SMITH.

Loyal, Wis.

MR. EDITOR:

I am well pleased with the appearance of the "Apiculturist" and its tone, and can but wish you success. Bees did very poorly in this section of country. Not a pound of surplus honey was taken this year. Bees went into winter quarters strong in stores and I think in numbers. The season on the whole was very poor; the first part was too cool, and the latter part too dry. My bees are mostly hybrids; have some very nice stands Italians; my mixed and natives have done the best by me in gathering honey. Italians are too venturesome; get too far from home in early spring and many of them never get back.

Will let you know in the spring how our bees come out.

Very respectfully yours, L. ALLEN.

Holbrook, W. Va.

MR EDITOR:

Many thanks to you for a copy of the "Am. Apiculturist." I send you a few lines of interest. Bee business is slow here in W. Va. The last two seasons were too dry for a good crop of honey. Our bees got a start in the spring on the apple blooms, after that was gone, they had a slim chance for a while. The Italians worked on red clover when it came out. We had a pretty fair linden bloom, so the most of our old stands gathered enough honey to winter on, and a little to spare for some late swarms. I had twenty-one stands last May and increased to thirty-nine colonies. Sold four swarms and four nucleus colonies; that left me thirty-five stands this fall. I commenced in October to fix up for winter, and found my new swarms and nuclei with no honey, so I doubled back to twenty-five stands. I have them all in chaff hives, and a cushion on each hive. They are all in nice trim. I winter my bees on the summer stand. Some lost their bees last winter, got discouraged and gave up beekeeping. W. B. ZINN.

Croton, N. J.

EDITOR APICULTURIST:

Winter has commenced in earnest, and the very sudden cold snap just experienced was very trying to our bees. They are packed on the summer stands and will winter there. I did not lose any last winter, and I had four new swarms before any one else around me. I now have twenty-one good strong colonies and expect to winter them all. The indications are for a mild winter. I do not expect to have bees in Jersey many years longer. I am going to see about a suitable place in Florida.

WM. E. HOUSEL.

East Middlebury, Vt.

MR. EDITOR:

In the fall of 1884 I had forty-six swarms of bees. In the spring of 1885 I had thirty-six: loss ten swarms, have increased to sixty-one by natural swarming. Sold two good swarms, let two go off, gave away three swarms and put back some, and got over 1800 pounds of honey, in two pound sections, and about 200 pounds extracted. My bees are brown Germans or natives, Holyland and Italians hybrids. Three years ago last summer I got four queens: two Italians and two Holyland

queens, which I introduced successfully. Should have got queens and Italianized my entire apiary, but for two reasons: first, two of my neighbors have native bees in box hives, which I cannot buy and they won't change them into movable comb hives, so they could be Italianized.

Second, I am not much in favor of the Italians or Holyland bees with the little experience I have had; perhaps if I had some of the *best* strains of those bees, I should think differently.

R. A. DUNHAM.

SPECIAL NOTICES.

TO THE READERS OF THE APICULTURIST.

Owing to extreme nervous prostration, caused by overwork and a burden of cares, it has become absolutely necessary for me to dispose of my entire interest in the "American Apiculturist" and *all* business heretofore conducted under the firm name of S. M. Locke & Co., in order that I might retire from and relinquish all business cares.

My former partner, Mr. Philip H. Morant, will hereafter conduct the business assuming all responsibilities and liabilities and I trust that in his hands the "Apiculturist" and the business will merit the continued support and patronage with which I have been so generously favored in the past.

Very respectfully,

SILAS M. LOCKE.

QUEEN REARING.

We know of nothing connected with beekeeping that will furnish more real pleasure and amusement than can be obtained by rearing queens. If you really desire to know the best and simplest methods for rearing queens, and, in fact, everything about queens, you should purchase a copy of the third edition of the "Beekeepers' Handy Book." This work contains nearly 300 pages and 100 fine illustrations. Sent by mail, bound in cloth, on receipt of $1.50. "Handy Book" and "Am. Apiculturist" sent one year for $2.25. If the purchaser desires a queen at any time between June 1 and Oct. 1, we will send one of the best of any race we rear on receipt of $1.00. Now is the best time to subscribe, and have your name registered, so as to avoid delay in receiving them.

BEEKEEPERS' SUPPLIES.

Attention is called to our price list of beekeepers' supplies, which we have appended to this number of the "Apiculturist." We are prepared to furnish anything mentioned in the list at the lowest cash price, and guarantee all our goods to be first-class in every respect.

In connection with the "Apiculturist" Supply Department, we have also a large queen rearing apiary under the direction of Mr. Henry Alley, and claim to have some of the finest queens and full colonies of bees of the new races to be found in the world.

We shall rear Italians and Syrians and their crosses the coming season, as we find that these two races give the best satisfaction, and are in the greatest demand. We especially recommend the crosses of these races as a superior strain, and one that will give satisfaction in any case.

EXTRA COPIES OF THE "API."

Any one receiving more than one copy of the same number of the "Apiculturist" will do us a favor by handing the extra copy to some beekeeping friend.

THE MUTH SMOKERS.

We have received from Chas. Muth & Son, of Cincinnati, Ohio, three styles of their all-metal cold-blast smokers. One is called "Perfection." We find them all perfect, and consider them the cheapest smoker in use. There is no wood-work about them, and they are made in a substantial manner. We have them for sale. See our price list.

THE DETROIT CONVENTION.

A brief history of the North American Beekeepers' Society, with a digest of its fifteen Annual Conventions, and a full Report of the Proceedings of the 16th Annual Convention held at Detroit, Mich., on Dec. 8 to Dec. 10, 1885. This is the title of a new pamphlet of 64 pages just issued by Thos. G. Newman & Son, Chicago, Ill. Price 25 cents.

We can supply them at the above price.

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A Journal devoted to practical Beekeeping.

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SPECIAL NOTICE.

The Apiculturist will be sent three months to any address for 25 cts., six months for 50 cts. or one year for $1.

To each new subscriber and to those who renew their subscriptions promptly, we will send likenesses of Rev. L. L. Langstroth and the late Moses Quinby.

SECTIONAL BROOD CHAMBERS.

BY DR. G. L. TINKER.

[*Continued from March Number.*]

THE frames can be supported in the sectional case on strips of sheet iron cut $\frac{5}{16}$ wide and as long as the case is wide inside, the strips to be inserted in thin saw cuts made $\frac{5}{16}$ of an inch from the inside lower edges of the ends to enter the wood only $\frac{3}{16}$ of an inch. This construction will give a proper bee space under the frames which should extend to the top of the case. The width of the end pieces of the frames should be $1\frac{3}{8}$ inches and the thickness $\frac{1}{4}$ of an inch making a closed end frame to rest on the sheet iron strips. The width of the top and bottom bars should be the same and may be $\frac{3}{4}$ by $\frac{1}{4}$ inch in thickness. Here let me call the attention of beekeepers to the comparative cheapness of these frames, if dovetailed at the corners, to those in common use. They need no nails and a set of fourteen for one hive can be put together in a few minutes and, as they can easily be made very accurate, they will always fit nicely in the cases. The length of the frame might well correspond with the $4\frac{1}{4} \times 4\frac{1}{4}$ section now so popular. The outside would therefore be seventeen inches long and, if made just five inches deep, it will take one-half of a sheet of foundation cut the regular size for the L. frame. The frames can be taken out of the cases very readily since, being very shallow, the cases can be set on end and the frames pushed through, one or more at a time. Hence the worthlessness of all clamps to hold the frames will be apparent.

Again, if we are to handle hives rather than frames, we can see no advantage in having so many frames in each case. I think we shall find seven enough, though many may prefer eight or even nine frames to the case. It will be then very light to handle, but to further lighten it we would make the sides only $\frac{3}{8}$ of an inch thick and the ends $\frac{5}{8}$ of an inch and make the usual hand holes in the ends or nail cleats across the ends a little above the middle line to handle them by.

The bottom board we would make out of one-half inch stuff with a cleat across each end of one-inch

stuff, the rear piece to be two inches wide and the front piece five inches wide; the bottom board to be cut one and one-eighth inches shorter than the hive is long, and the wide cleat nailed across two inches from the end. This would give an entrance across the front of one-half inch. If blocks are nailed on each side to go under the front corners of the hive, ordinary entrance blocks can then be used.

Sectional hives containing only seven or eight frames in each section will be so light that we shall find it an easy task to carry them back and forth from cellars in wintering, where they can be placed under our full control and wintered in a scientific manner, which we shall never be able to do in outdoor wintering where we cannot regulate the temperature at will. Only one of the sectional cases, well filled, will be necessary for each colony for the winter.

To operate a sectional hive of shallow frames successfully we shall need a honey board with strips of perforated zinc set in thin saw cuts made in the edges of the slats composing the board. This construction, and use of perforated zinc is my invention, but it is free to all to use. As any kind of a section case or super can be adjusted to this hive every beekeeper will be expected to use his favorite.

The capacity of two of the sectional brood chambers will about equal the eight frame L. hive but many would prefer to use three of the parts in building up for the honey harvest. The frames alone are made to reverse but we shall need to reverse them but once and that simply to get the frames filled out with comb plump to the sides all around. Ordinary six-inch boards can be split and dressed to three-eighths for the sides of the cases and we shall have no trouble to get whole boards wide enough for the bottoms and covers. For a very cheap hive we shall never get a cheaper and a better hive, for large results may not be possible. It will hardly be necessary to add, in conclusion, that this hive is not patented or patentable, except in one or two features which are my inventions and are hereby freely given to the public.

New Philadelphia, O.

TEMPERATURE, A FACTOR IN BEEKEEPING.

(Continued from p. 27, Vol. IV.)

By S. Corneil.

In ascertaining the exact temperature of bees much depends upon the sensibility of the instruments used and upon the ingenuity and skill of the operator in using such methods as will guard against error. In my own experiment the thermometer indicated 76° 24 hours after it was pushed into the cluster. Next day it stood at 70° and the following day at 54.° On examination I found the cluster had drawn away from the instrument and left the bulb partly bare. Had the thermometer been inserted from above between the combs instead of being pushed into a large cluster formed beneath, the cause of this sudden change could not have been so readily seen. The writer, in the B. B. J., to whose experiments I referred, used long wire cloth cages inserted between the combs. His thermometers were placed in these cages and withdrawn from them without disturbing the bees.

On one occasion, a thermometer in one of Newport's hives stood at 30° while the outside temperature was 17½.° The bees were roused by a few taps on the hive and in sixteen minutes the mercury rose to 70° but the bulb was now covered by

excited bees while previously it had not been in contact with the cluster.

The late Dr. Carpenter in his Comparative Physiology quoted freely from Newport's paper on the heat of insects. In order to avail myself of all the "knowledge gathered in" relating to the heat of bees, I took the opportunity of asking Dr. Carpenter, on the occasion of his late visit to Montreal, what had been done since Newport's paper appeared in 1837. In reply, he sent me the following letter.

Montreal, August 31, 1882.

DEAR SIR:

As I have not, for many years past, attempted to keep up with the progress of comparative physiology, I am unable to say whether any observations on the heat of insects have been made subsequently to those of my friend, George Newport. I can only tell you where you are most likely to learn anything that has been since done on the subject.

Prof. Milne-Edwards of Paris completed, about two years ago, his great work on "Comparative Physiology" in ten or eleven volumes. This is sure to contain references to anything that has been published on the subject up to that date. The work will doubtless be found in the principal public libraries of the U. S.

The most likely man to have published original observations on the subject is Prof. Plateau of Liege, (Belgium). References to his papers in journals and transactions, will be found in the society's catalogue of scientific papers (with successive supplements) which I know to be in several of the public libraries of the U. S.

I hope that through these channels you may get the information you wish.

Yours truly,

WILLIAM B. CARPENTER.

The works mentioned are not in any public library within my reach and I now publish Dr. Carpenter's letter hoping that it may fall under the eye of some one who can conveniently examine those works and who will give the readers of the "Api" the benefit of what they may contain on the heat of bees. Possibly, Mr. Arthur Todd, who has given us so many good things, may be able to find those works in some of the public libraries of Philadelphia.

It is sad to recollect that Dr. Carpenter, as well as the other scientists whom he mentions have died since the above letter was written.

Lindsay, Can.

THE CAUSE OF BEE DIARRHŒA.

BY C. W. DAYTON.

ON Nov. 23, 1884, I placed in a cellar (which was built for the purpose of wintering bees) sixty colonies of bees, which were suspended in mid-air, and forty colonies that were in hives having tight covers to the brood-chambers.

Prepared in this way, the sixty colonies had as much upward ventilation as it was possible to give them, and the forty colonies had no upward hive ventilation at all.

As the colonies were set in the cellar they were alternated with each other, facing an aisle three and one-half feet wide. During all the winter the temperature of the cellar did not vary outside of 47° at the top, and 44° at the bottom.

For the first six weeks, the bees seemed to be enjoying so called "hibernation," at the end of which time the colonies in tightly covered hives showed uneasiness and signs of diarrhœa, which increased so that March 16, found seventeen of them dead.

On May 1, only eleven weak and diseased colonies remained of the forty having tight covers to the brood-chambers, while of the sixty, suspended in mid-air all were healthy and strong, save one, and that died undiseased.

On Nov. 13, 1885, 112 colonies were placed in the same cellar, and

the temperature was maintained as in the winter before. One of these colonies had a tight cover to the brood-chamber, while the 111 did not. At this date (Feb. 25, 1886) that solitary, unventilated colony is diseased, while all of the others are healthy.

From these experiments it would be supposed that the most destructive of all bee diseases was pretty nearly cornered. As a result of numerous experiments which I have made during the last several years, I find that I am able to kill bees or preserve them alive, as I choose, but what the exact cause of bee-diarrhœa is, I am as yet unable to tell.

In a large number of cases where colonies were affected with diarrhœa, I have found condensed moisture so located as to run into the cluster of bees, and instinct would prompt them to sip it up, in order to maintain a fit place for the rearing of brood. At other times there was no visible moisture present, but where the covering of the brood-chamber was removed, there was emitted a very sour odor, which would indicate sour honey and could not have been without the aid of moisture.

In a moderately dry and warm cellar, with upward ventilation and pure stores, I have never known of a case of diarrhœa. We may experiment in such a manner as to find out which are the desirable conditions for successful wintering of bees, and which are not, but to give the disorder a name is all theoretical conjecture. The name that I consider as the most applicable to the disorder is indigestion, and may be produced by the effects of overloading the intestine with cold water, partaking of sour honey, uneasiness, excitement, and exposure to temperatures so low as to interfere with the digestion.

Bradford, Canada.

SPRING MANAGEMENT.

By Allen Pringle.

This is a hackneyed subject, though I suppose it will bear handling until such time as we may be able to bring our bees through the spring without loss, when "spring dwindling" will be counted among the past misfortunes of beekeepers.

First, then, *when* shall we set our bees out of their winter quarters? That will, of course, depend on the latitude and the weather; and the suggestions given here can as a matter of course only specially apply to Canada and the northern states. For myself, I am getting more conservative on this setting-out question, and am leaving my bees longer in the cellar every spring, especially if the weather is at all unfavorable. If they show signs of disease or undue restlessness, it is of course better to put them out for a flight when they can be returned if necessary. Last spring, I commenced setting my bees out April 16, and finished up May 13. Nor had the last ones set out been out before and returned. They had been in winter quarters since Nov. 25, making a confinement of over five months and a half. Yet they were mostly in good health and condition, and were in as good order for the honey flow, if not better, than those first put out. But why put out some so much earlier than others, the reader asks? Well, for more than one reason. Those which show any symptoms of diarrhœa and those becoming restless ought, of course, to be put out first. Then if any are short of pollen (and this must be noted in the fall) such ought to be carried out and supplied so that the brooding can go on. Those with plenty of honey and pollen, if fairly quiet, are better in than

out in the latitudes mentioned above, until the weather gets fine and warm, even if that takes to the middle of May or later. In addition to these reasons for no hurry in setting out bees in spring, I always make it a point to overhaul them and fix them up the same day they are set out, and this could not be done in a day or two.

So much for the time and order of setting out. What next? After the colony is placed on its own old stand, first see that the exit is well cleared so that the bees can pass out and in freely. By the time you get all for that day set out, the first will be about ready for manipulation. Have your duplicate empty hive prepared—clean and nice—and then proceed to lift the frames out, bees and all, clean them by brushing off adhering dead bees, etc., and put them in the clean hive, that is the frames containing most stores, and those containing brood, simply leaving them the number of frames they can fully cover and removing all the others to a proper place to be kept until wanted. Care must be taken not to chill any brood that may be present. Crowd the frames up together pretty closely, put your division-board in, one on each side of the frames; fill in with sawdust or chaff quilts; put lots of warm, non-conducting quilts on top to keep in the heat, contract the entrance and the job is done. But while making this spring overhaul of the colony certain facts and conditions must be noted so that the colony need not be again disturbed till necessary. If there is no brood present, hunt up the queen to satisfy yourself the colony is not queenless. Then note the presence or absence of pollen, the quantity of honey, when they will need more comb and room, etc., etc. This can all be noted in your memorandum book if your hives are numbered (which they ought to be) or can be simply noted on a piece of paper and left under the cover on top of the quilts. Fix your hives all up in this way snug and comfortable—and then you can always tell what hives require your attention by referring to your memorandum. The habit of opening hives in spring unnecessarily is a bad one and ought to be discouraged. Indeed it is bad at all seasons, but especially so during the chilly, changeable weather of spring, when the heat of the colony ought to be carefully conserved.

The main advantage in leaving bees with plenty of stores in the cellar till late in the spring is this: the old workers live much longer in than out, not being exposed to the weather vicissitudes of the spring season. Many a colony that now dwindles and dies outside would, if left inside in proper quarters, come through all right. If they are fairly quiet, and have plenty of both pollen and honey, and the repository is comfortable, they are much better in until the weather gets warm and settled. If the hives are on bottom-boards in the cellar there will of course be more or less of an accumulation of dead bees below, and this is one of the main objections to leaving them in late. In the case of movable bottoms this difficulty can, however, be easily overcome by quietly lifting each hive off its bottom board and placing it on another clean one. This, if done carefully, will disturb the bees very little. Fast bottoms can be pretty well cleaned off through the entrance by means of a wire with a crook on one end.

The colonies outside short of pollen can be fed substitutes before the natural pollen appears. Spread oilcake meal, rye meal, or wheat meal on old sheets near the bees

on warm days and they will help themselves.

As to the disputed utility of spring stimulative feeding I do not hesitate to again declare myself in its favor. If, however, the queen is young and prolific and the colony well supplied with stores stimulation is quite unnecessary. All spring feeding for whatever purpose ought always to be done inside the hive intead of in the open air. In the case of tight bottoms the hive can be tipped *back* a little and the food poured in from the top on the bottom board. Where the bottom is not tight the food must be given on top of the frames through "Feeders" or otherwise. As the colony is nearly always contracted in the spring the food may often be put in behind or outside of the division-board whence the bees will carry it up.

The essentials of spring management may be summed up thus: set out the bees at times as above directed. Clean them out thoroughly the same day they are put out if possible, for if left they not infrequently get disgusted with their unclean domicile and "swarm out" for nicer quarters. Be sure and make them comfortable—keep the heat in the hive by some means—this is important, and contract the entrance. If they have not plenty of stores supply them, for they will not brood freely on a scant larder. Give them pollen in the open air before the natural pollen appears. Give them more room and more frames from time to time as they may require. Do not, however, go too fast in this matter of "spreading out," for if you do you will be very apt to pay for the whistle. In adding room and frames always keep in view the rapid diminution of the old stock of bees in the spring. In adding a frame of comb containing capped honey, uncap only one side to be safe and and do not put it right in the middle of the brood nest as generally recommended (unless indeed the colony is very strong and the weather settled), but put it at one side of the nest with the uncapped side next the brood. Finally time your manipulation and management so that you will have a splendid force of young workers when the honey-flow begins, and when that time arrives if there is any old honey or inferior spring feed in the hives extract it without delay, and your spring management is over.

Selby, Lennox Co., Ontario, Feb. 12, 1886.

OUR BEE LIBRARY.

By Will M. Kellogg.

It was with considerable surprise, mixed with delight, that I removed the wrapper from the bound copy of the "Apiculturist." I have Vol. 1 of the *American Bee Journal*, bound in paper, in a strong, durable manner, and it was a similar book I expected to see, so no wonder I was pleased when I saw this elegant book, fit for any centre table, or the shelves of any bookcase. I have eleven bound volumes on beekeeping by individual authors, besides nearly complete files of almost all the bee journals that have been published in America, quite a library by themselves. I have thought many times that I would like to get all my journals bound so that I could have them out in a bookcase by themselves, instead of being packed away out of sight; but the expense has always deterred me from doing it, for our local binders charge more than the subscription price for a medium, fair binding. Then, too, books of any kind on our bookshelves are much more apt to be

read and appreciated than magazines laid away. Friend Newman once wrote me he could bind my files of the A. B. J., in same style as Vol. 1, for thirty cents per volume. What could we get our various bee journals bound for, per volume, in similar style to Vols. 1 and 2 of the "Apiculturist?" It might be that the many beekeepers of the land, who have kept their journals in good order, could give a binder so much work as to get very low rates. I must not forget to add that the contents of this new book, do not, in any way, fall short of its fine covering.

Oneida, Ill.

PATENTS ON BEE FIXTURES.

By J. M. Shuck.

I regret that Bro. Demaree chose to append to his otherwise useful article in your last issue, the threadbare general charge against patents in apiculture. I hope he worded his expression on the matter unfortunately. If he is correct some of us are offering to sell what we don't own. If he is incorrect, he is encouraging beekeepers to use what they don't own.

Kentucky has a reputation as a square trotter. I hope Mr. D. will either modify his statement, or prove his assertion, and tell us what patents he means.

Des Moines, Feb. 17, 1886.

CANADIAN DEPARTMENT.

By R. F. Holterman.

The most important topic for Canadian beekeepers appears to be the display of honey at the coming Colonial and Indian Exhibition.

Last fall at the annual meeting of the Ont. Beekeepers' Association, it was generally understood that the crop of 1886 would be secured in time for the exhibition. Many who might otherwise have retained honey sold theirs, and in consequence, when the news came that the honey must leave for Kensington by the last week in February, those best able in many respects to make a display otherwise, and most willing to make it, found they had an insufficient quantity to make it with. The matter was represented to the government, and after some time we found to our joy the crop of 1886 would do to make a display.

A meeting has been held at Toronto, and the five commissioners were appointed by the Ontario Beekeepers' Association, consisting of Messrs. Rettit, Hall, McHughs, Jones and Corneil, to visit England and see to the display there, as well as finding an outlet for our honey there.

It is anticipated that the monster Canadian display made will attract the notice of all classes; that attention will be drawn to honey for an economic food and a luxury, and the article will be in largely increased demand, benefiting the English beekeeper as well as the Canadian. I may well go so far as to say we shall have a grant from the Ontario government to help the display. We (the Ontario Beekeepers' Association) expect to be incorporated and also get an annual grant of this latter. A comment was made by the "British Bee Journal" upon the proposed shipment of honey, which, unless carefully read, might mislead. We consider the editor above a spirit which would injure, in however indirect a manner, any one, and in writing the article he could have had no intention to injure. Consumers and beekeepers may rest assured, however, that we Cana-

dians) will never take to Europe an article, etc., unworthy of our country, ourselves, and beekeepers. We are not shortsighted enough for that, and it is to be hoped could we gain even, we are not dishonorable enough to place upon the market an article not as represented.

FLUX AS A BEE DISEASE.

By A. J. Goodwin, M.D.

HISTORY.

So far as known in temperate climates, it has been coëxistent with the domesticated life of the insects; occurring usually at the periods of winter and spring.

SYMPTOMS AND COURSE.

They present a distended and elongated abdomen, so that in walking the tip drags; their movements are somewhat sluggish with frequent and uneasy stopping and turning about on the front of the hive, alighting board, frames or combs, where they may happen to be, according to the weather, the heaviest finally discharging their fæces as they stop, turn, or drag along; if mild weather occurs others essay to fly and, finding their load too heavy, soon reach the earth, crawl about and discharge their burden; some die at once from the exertion and collapse, others rise a moment and sink again being overcome; still others fly and discharge their loads and return to the hive and recover, if suitable weather continue. The evacuations present a fluid to a semi-solid consistency, often retaining their cylindrical shape and, in color, vary from a pale yellow to orange or brown.

CAUSES.

These may be divided or classed as the *predisposing* and *exciting*. Of the former, first in rank stands *age* (1). Now, as is well known in all life, the very young and the aged are much less able to withstand the conditions and forces that constantly surround them, than at the intervening period of existence. Thus it so occurs that, when the winter is over or about so, or even spring opens, the majority of the colony are old and feeble in a descending scale, rendering them an easy prey to natural and the exciting causes of disease.

Second, insufficient protection from atmospheric conditions: as sudden changes of temperature, dry or moist locations, or domiciled in hives not duly proportioned to their numbers.

Third, stores. These are regarded as to quality and quantity; the *location thereof*, being the principal one of these.

Fourth, early cessation of brood-rearing which is but a plain inference from *age* (1). The last three are or ought to be under the control of all apiarists (and surely they may be), which would mitigate greatly the first and do away with many that are classed as the *exciting causes*.

First, and embracing all others of this class will be found *undue excitement* which arises principally through *temperature* (A), *meddlesome handling* (B), *fear* (C) and *loss of queen* (D). *Temperature*, A. Too long a continuance of cold, as is well known, tends to impair the vital powers of life. In most cases, the greatest liability to disease, however, arises, not from its *intensity* in regard to insect life, as is well known in the winter life of ants and bees in the forests of the north, where they are frozen solid as are the trees that contain them; but rather to the too *sudden rising* of temperature after exposure in walls either too thin or composed of good conductors of heat which tends to induce undue excitement, when the cluster be-

comes broken by their sudden activity. Now, if the air is still and clear, many may venture forth; but, soon chilling, return to the hive (if able) and load their sacs too heavily with cold food, reducing yet their animal heat and overwhelming their digestive ability, so that the mass is but partially digested. Now, its presence in that condition soon amounts to a chemical and mechanical irritant, inducing congestion and a pouring forth of the bodily fluids into the sac and intestines which, by the combined distension, produces violent contractions or spasms (as in colic of the higher animals) the outcome of which is to rid the system of a poison which, if successful, constitutes the flux. If, however, nature fails in her efforts at the riddance it kills, through the repeated torturing cramps, by exhausting the already lessened vital powers, and death ends all. In case it is passed off, as is mostly noticed, such an exhaustive evacuation is generally followed by collapse or sinking of the vital energies, proportionate to the duration and intensity of the attack which, if not below the recuperative powers, tends to recovery; otherwise death or permanent injury (which are the same thing in the hive) results sooner or later.

Meddlesomeness, B. This acts by producing *fear* which, with the bees, induces self-preservation prompting them to overload the sac with a mass of cold food greater than they can either warm or digest, which if not soon regurgitated, produces all the effects enumerated under (A). *Fear* (C) is commonly a result of (B); its sudden seizure, however, of most animals, often produces panics or stampede, which will often act more promptly than a purgative can; among which man is not even excepted.

Queenlessness, D. This tends to induce over excitation through alarm, consternation and fear, resulting in the same abnormal condition and injurious result to the colony. This is the disease as it has presented itself to me in the north and west as seen at the cellar, clamp and summer stand and may exist both inside and outside the hive, but way down south where it never occurs and (bees gather stores all the year around according to some) the beekeepers' Utopia is, it has presented itself to me in the same old symptoms, but in a much milder form and with disaster in trifling proportions, but it is only by gathering data in differing localities that we arrive at the most certain conclusions; hence the value of a description of it from here in latitude 29° and the circumstances under which it occurs with us. And first, it takes place *outside* the hive generally (the exception I have seen but once, and in a queenless colony that was worried by robbers and had a fertile worker), and occurs between the foraging grounds and the apiary which some observers might think was a cleansing flight such as is often seen on fine days during winter at the north. This, however, is induced almost invariably by cold winds laden with moisture, the latter augmenting and rendering more depressing the effect of the former. It should be known that a reduced temperature, to act most injuriously, must be applied not when the body is hot (as is commonly supposed) but when the body is *cooling* after being heated from whatever cause (as in labor or undue excitement). The way in which it acts appears to be in this wise to me. Supplies being desired and within their range, they sally out as they did, say yesterday; their flight is rapid until supplies are reached, then they are actively engaged near the earth in securing their treasures; the ex-

ertion renders them somewhat weaker; when secured, they rise to go home, but the nearer they approach the apiary the slower their flight becomes which, with their loads and the chilling wind, acts promptly upon them and they bespatter everything so long as the wind keeps between N.W. and N.E. With *the wind from any other quarter* and *even a lower temperature*, I have never seen it here. I have also seen this form of flux produced here, when bees were fed a weak solution of sugar with the wind as above and a clear sky, during a temperature between 50° and 60° F. My heaviest deposit occurred March 8, 1885, with the glass ranging between 52° and 55° F. and wind N.N.E. My location (to me seems to make it plain enough) is so situated that the wind from points indicated blows directly from the Atlantic Ocean, distant but one mile hence; when the bees forage between the apiary and the beach, they are exposed to a wind, cold and laden with moisture and brings about the same results here as it does elsewhere, according to my observations.

DEDUCTIONS.

All the conditions seem to corroborate each other as regards their causes; their prophylactics and treatment will be at once inferred from the pathology given by any intelligent beekeeper and so appears not to demand amplification.

Live Oak Apiary, New Smyrna, Florida.

UNITING BEES.

By D. F. Savage.

For uniting nuclei or weak colonies, smoke them well, remove all queens but one and be sure of that one, in an empty hive; put first a frame from one nucleus, then one from another and so on alternately till there are enough, then shake down or brush off all other bees, works best just at night, contract the entrance and put some obstacle before the door. Colonies to be united are moved a little daily toward each other till they are side by side as Langstroth and other authorities direct. If either colony has been for some time queenless, other bees having a queen will usually murder the new comers, but not if just unqueened. Sometimes queens and all are united and the queens settle the matter of succession, and I have known two to survive where four were thus united in the fall.

Though these things have been known and practised for years by some of us, there are always those who are new to the business and we may benefit them by giving our old methods when tested and found good.

Casky, Ky.

BEES MARKING THEIR LOCATION; OTHER MATTERS ON BEE CULTURE.

By J. M. Hicks.

It is a well-known fact this is done through the sense of sight. A large number of the bees that fly out in the early spring are those that have been matured and hatched during the latter part of winter and early spring; consequently, they do not leave the hive in a straight or direct line, but only venture a few inches and then turn their heads toward the hive and oscillate back and forth in front of the hive, with their heads towards the entrance, occasionally advancing a little farther out, as if to note more particularly the place and surroundings ;also the entrance of their hive. They then increase the distance, taking a more thorough survey of trees, buildings,

fences and other permanent objects near by after which they return to their hive, and start out on a direct line from it. This they do, from and after they are fourteen days old, as the regular workers of the swarm; gathering pollen, honey and water for the use of their young; for be it remembered that it requires twenty-one days to hatch the worker bee from the egg, after which, they still remain in the hive fourteen days before they venture out as above described. It is also true, that the same eggs would have hatched a queen in five days less time, if it had become necessary; of which the young bees, under fourteen days old, are the proper judges of the conditions, and always proceed to accomplish and mature a new queen, as soon as it is discovered they are destitute of one, which too frequently occurs in early spring. Herein lies one of the greatest mysteries of practical and scientific beekeeping, by reason of which, being too little understood, many failures have been the result. We suggest that it would be well that all who contemplate trying to keep bees, either on a small or large scale, should at least procure some good book or books, giving full instructions on the subject; also take some good bee journal, giving lessons each month in the care and management of bees. We have noticed of late in some of the agricultural papers, articles defamatory, as to the profits on bees and the business of keeping bees, of which, all we have to say is, we do not wonder they write such articles, when they are engaged in so many other pursuits, either of which would afford ample labor for any one who is disposed to try to make a success at any occupation. For instance, we saw an article written by a man who, not long since, wrote us two o ng letters telling us how much labor he had to perform, which embraced four different occupations, viz., hardware clerk, gardening, beekeeping, and poultry raising, all of which, if taken together, are well calculated to burn at least some of the many irons placed in the fire at the same time, and yet we feel quite sure that if the gentleman's location is worth anything for either of the vocations mentioned and properly attended to, there need not be a failure in either one, if taken singly and alone. *Do not try to do too much, but what you do, try to do it right.* We know for ourselves, that bees do and can be made to pay eight to ten hundred per cent; but there are some "drawbacks" even in keeping bees.

Please tell me what business has not its reverses and ours is not an exception, and as before stated, whoever enters upon beekeeping expecting to get rich in two or three years, from a half dozen hives of bees, will surely meet with disappointment. The writer of this article has managed and kept bees over forty-five years, and with all its reverses, I do not know of any other occupation or business, I could be induced to take hold of, to the exclusion of bees and the management of the same.

Battleground, Ind.

CLETHRA ALNIFOLIA.

By Jacob W. Manning.

This hardy native shrub has within twelve years been more fully brought before the public as a most desirable ornamental shrub for private and public grounds, either planted separately or in large groups, or as a thick belt. It blooms late in July and August when other flowers are not very abundant. The flower is white in a branched spike four to eight inches long, possessing a richness of fragrance

that is seldom equalled by any native or exotic. It is strange that it had not long ago been esteemed one of Nature's silent unobtrusive blessings. In 1874 we procured an engraving of the flower and it has since been more prominently brought before the public.

About 1878 it was fully understood by a few to be one of the best flowers the honey bee could feast upon for its store of honey. It appears that it is so well satisfied with it as a forage plant that during the season of its bloom few other flowers are visited. After the flower was engraved by us in 1874, it was seen by Miss Amanda Parsons of East Gloucester, Mass., and pronounced by her as a very exact representation of the flower as it grew in her father's pasture where her bees revelled in its sweetness. Miss Parsons sent us a tumbler of the honey made at the season when her bees gave their whole time to gathering honey from its flowers and truly it was no longer a question of its sweetness, whiteness, or purity; nor a doubt of choice in flowers distinguished by the honey bee. Doubtless a traffic could be built up for the sale of plants by the thousand or ten thousand, for it is practicable to grow it by the acre, on a great variety of soil.

Downing of Newberg, N. Y., who was known as the highest authority as a judge of fruit who was not lacking in his correct judgment of flowers, wrote us from Newberg, N. Y., Feb. 24, 1878: "the Clethra has always been a favorite shrub with me, flowering at a time when there are but few shrubs in bloom. Its fragance is delightful. It is not planted so much as it should be."

The cultivation of the Clethra is very simple, growing generally on cool or moist soils often in shady locations; it is also found in strange contrast growing in dry ledgy pastures in patches of small and quite large dimensions to the exclusion of all other shrubs, flowering in the most glaring sun and remaining in bloom several weeks. This exposed situation was on the extreme point of Cape Ann, Mass., in open pasture land.

To grow it by the acre, for bees, well ploughed land, planted in one to two feet apart, three feet between the rows or four thousand to ten thousand to the acre, cultivated by horse and cultivator as long as the plants will admit, as the plants extend on all sides after the fashion of the old purple lilac or the sweet scented syringa, in a few years a complete mass of the Clethra will occupy the ground affording pasture for the countless numbers of the honey bee.

Reading, Mass.

NOTES FROM ENTERPRISE APIARY.

By C. M. Goodspeed.

STARTING AN APIARY.

It is considered good advice to give a beginner, to tell him to buy only a few swarms to start with and let his experience grow with them. To this nearly every bee-keeper will assent.

Next comes the perplexing question of *hive* and *management*. We all have our *pet* hive and theories of management, and we are apt to crowd our ideas on people pretty strongly whether we are right or not. We now have a multitude of hives to choose from, many of them good and more of them too complicated and theoretical to be of any practical utility.

It is a strange though well established fact that nearly all apiarists, somewhere in their "Bee Fever" experience, have had an attack of hive-inventing which has lasted them until after promulgating two or three worthless boxes

they call hives. A year or so has found most of this class of hives in use as "hens' nests;" and the originators, settling down on some old standard hive, watch the next generation of beginners do exactly the same thing only to be repeated *ad infinitum*. Why waste time and money?~ It is the experienced who are competent to give us good ideas in this direction. Large crops may be secured from almost any of the hives in general use. I use the L. hive and frame because it is best adapted to my wants. I would not use a shallower hive on account of wintering and I get more surface on top for boxes than I would if I used a deep frame, and if I wish to buy or sell I have the hive and frame that is more widely used than any other. It costs too much to change a whole apiary for every new scheme that comes up. Experiment with a few at a time. The market price of honey has declined, the cost of producing must keep pace. In choosing a hive, avoid as much as possible all loose blocks, wedges or anything easily lost.

The brood chamber should be variable in size, ranging from the wants of a one-frame nucleus to the full working force of two strong colonies united in one, and in either case everything must be snug and warm.

I use a single-walled hive and winter in the cellar. If I wintered out-of-doors I should use a chaff hive by all means, and I am not sure but I should build a hive calculated to winter two stocks in and be packed with chaff besides. I want a hive that is equally well adapted to the production of comb and extracted honey. At present *our* market demands comb honey, but occasionally a colony will be obstinate; then we take off all boxes and arrange for extracting.

Thorn Hill, N. Y.

FOREIGN NOTES.

BY ARTHUR TODD.

L'Apiculteur for February contains a description illustrated by wood cuts, of a comb foundation machine, which was exhibited at the late conference at Milan, Italy, and which obtained a medal. It is extremely simple in construction, and suitable for the manufacture at home of the foundation one would require for an ordinary apiary. There are two metallic plates, one side of each being engraved, the same as the present comb foundation machines.

These engraved surfaces are set opposite each other, and the two plates hinged together so as to close up; the one against the other, more or less, as thick or thin foundation is required. To each plate, at the side farthest from the hinge, is attached a handle by means of which the plates can be readily moved on the hinges. They then remind one forcibly of a set of waffle irons. A bath of melted wax is prepared large and deep enough to permit of these hinged plates being plunged therein while kept apart by the handles. The plates, previous to plunging in the wax bath, are plunged in starchy water while in the wax bath, the two handles are brought together, which action, by closing together the plates, encloses between them a film of melted wax. While kept closed the plates are lifted from the wax bath and plunged into a bath of ice-cold starchy water. When sufficiently cold the plates are separated, and the sheet of comb foundation is found between.

The present cost of such a machine seems to be not much over $4.00.

The use of the plates is not new, nor is even the hinging of them, but the addition of the handles,

and the idea of enclosing between the plates a film of hot wax, and cooling the same *in situ* seem to me to be an "original idea" and sufficient to warrant the appellation of "Inventor" to Monsieur Guazzoni.

The season for "Introduction of Queens" is now gaining upon us fast, and as among our English brethren the "Senimius" system has proved very successful, it may not be out of place to give some particulars of Mr. Senimius' methods.

First Method. Upon receipt of a queen, go to the hive, and remove that one to be superseded (or otherwise). At dusk take the new queen *quite alone* (after having kept her so for not less than thirty minutes previously, but quite warm, and moreover, without food meanwhile); lift quilt at one corner, drive bees back with very little smoke, and then permit the queen to run down. Close the hive and make no examination until after forty-eight hours. Leave the operation until so late that a lamp is necessary.

Second Method. When queen is received, at once make up a nucleus to receive her, thus: from a strong colony take one frame of hatching brood, with adhering bees, and place in a nucleus hive, then shake off most of the bees from another comb into such small hive, and on either side of the one containing brood place one comb of honey; close entrance with perforated zinc, and place on top a sheet of straining cloth, tacked to a simple frame. Thus securely confined, and having ample ventilation, they are to be taken into a warm dark room. In a few minutes finding themselves confined, and queenless, a great uproar will be heard; now slide frame of strainer cloth off one corner, and let queen run in, keeping bees back with little smoke if necessary. Close again, and let them remain in-doors until the third day, when stand out where desired. After a day or two give another frame of hatching brood which repeat at intervals of seven days, or as often as they appear able to cover more combs, until well established.

Philadelphia, Pa.

NEW OBSERVATIONS OF THE NATURAL HISTORY OF BEES.

By Francis Huber.

(Continued from p. 253, Vol. III.)

If you have satisfactory evidence that the matter seen on the last rings of the female is truly masculine, it is more than mere presumption in favor of the truth.

Perhaps it may be necessary that the male should seize the female under the belly, which cannot be easily done but in the air. The large opening at the extremity, which you have observed in so particular a condition, seems to correspond with the singular size of the organs of the male.

You wish that I should suggest some new experiments on these industrious republicans. In doing so, I shall take the greatest pleasure and interest, as I know to what extent you possess the valuable art of combining ideas, and of deducing from this combination, results adapted to the discovery of new facts. A few at this moment occur to me.

It may be proper to attempt the artificial fecundation of a virgin queen with a pencil, at the same time observing every precaution to pre-

vent error. This experiment, you are aware, has already succeeded with more than one animal.

To ascertain that the queen, which has left the hive for impregnation, is the same that returns to deposit her eggs, you will find it necessary to colour the thorax with some varnish resisting humidity. It will be proper also to paint the thorax of a considerable number of workers in order to discover the duration of their life, which is a more secure method than slight mutilations.

That the worm may be hatched, the egg must be fixed almost vertically by one end near the bottom of the cell. Is it true that it is unproductive unless when in this position? Unable to determine the fact I leave it to the decision of experiment.

I formerly mentioned to you that I had long doubted the real nature of the small ovular substances deposited by the queens in the cells, and my inclination to suppose them minute worms not yet begun to expand.

Their elongated figure seems to favor my conjecture. It would be expedient therefore to watch them with the utmost assiduity from the instant of production until the period of exclusion. If the integument bursts there can be no doubt that these (minute) substances are real eggs.

I return to the mode of union taking place. The height that the queen and the males rise to in the air prevents us from seeing what passes between them; on which account the hive should be put in an apartment with a very lofty ceiling.

M. de Réaumur's experiment confining a queen with several males in a glass vessel, merits repetition; and if, instead of a vessel, a glass tube some inches in diameter and several feet long were used perhaps something satisfactory could be discovered.

[*To be continued.*]

EDITORIAL NOTES.

THE AMERICAN APICULTURIST.

This number completes the third year's existence of the American Apiculturist. One who has not experienced the difficulties and discouragements attendant upon the starting a publication of any kind, has but little idea of what must be endured in order to make such an enterprise a success. The friends of the APICULTURIST promptly rallied to its support, but we found from experience that the success of our journal needed something more than enthusiastic friends. However, the "struggle" long ago ended and we can assure our readers and friends that the "API" has come to stay. We believe the APICULTURIST will maintain its well-earned reputation "as the best bee-journal." At any rate, every effort will be made to make it so.

Our correspondents are among the best in the world, and its present manager has had thirty years' practical experience in bee culture. We have combined in the APICULTURIST every element to make it what our friends claim for it, namely: "*the best bee journal published in the English language.*"

It is pleasant to note here that every mail bring us encouraging words from every state in the Union, and our subscription list is increasing at a very satisfactory rate.

The reader will notice that we have set the type nearly solid in our reading columns, thus practically adding nearly four pages to the "Api." When our subscription list reaches a certain point, four pages more of solid reading matter will be added. Now, friends, if you wish to aid us in publishing the *best* bee journal and one strictly devoted to your interests, you can do so by sending us your subscriptions and getting your neighbor

beekeeper to do the same. If the APICULTURIST lacks in anything to make it interesting and worthy of your support, we would be glad to have you make any suggestions which would in your opinion, be of advantage to all concerned.

AN EXPLANATION.

—Editors, like other people, are sometimes imposed upon. We have in mind a case of this kind and where great injustice was done an innocent party. In July, 1885, the former editor of the APICULTURIST admitted to its columns a communication of a personal nature reflecting severely and most unjustly upon the editor of one of our esteemed contemporaries. The writer of this was familiar with the circumstances and strongly protested against the publication of said article. As we had no voice in the management of the APICULTURIST at that time our opinions and suggestions were not respected; consequently the communication duly appeared as above stated. After the journal had gone to press and it was too late to remedy the matter, the author of the unjust article wrote the editor of the Apiculturist that the trouble (if any existed) had been satisfactorily settled, and expressed his regrets that he had made the matter public.

Mr. Root has shown a disposition to deal fairly with all people. We make the above explanation in justice to the editor of "Gleanings."

—The season of 1886 is close at hand and the thoughtful apiarist will have his hives, sections and other apparatus in readiness in order to take every advantage of the coming honey harvest. In the course of a few weeks the experienced bee-master can readily select the colonies most likely to produce the largest amounts of honey. As is generally the case, some of the most prosperous stocks the past season will be likely to fall behind the coming season. The causes of this are generally bad wintering, or the queen has "played out." Such colonies should be attended to early, and by a little extra care and nursing they will come out all right. All the plans for the season should now be made so that there will be no confusion during the busy days.

—So far as reports have reached us, bees are wintering better than for many years. This is especially true of those left on the summer stands. We have often stated the fact that, if bees could have a good cleansing flight in February there was no doubt about their coming through in good condition. Very few colonies after they have been confined in the hives three months, can survive such a "blizzard" as struck New England Feb. 26, and continued without abatement for five days. As bees had a good flight but two weeks previous they came out all right.

—Several correspondents have asked for our opinion regarding the latest new book and beehive. We know but little about either of them, but we venture the opinion that both have some real merit, though we cannot say that these things will "revolutionize" the world so far as bee culture is concerned. Experience has shown that the largest amounts of honey have been taken from the Langstroth hive, but not by the author of the new bee book. Mr. Heddon has never shown to the public that he has made beekeeping so much of a success as many other apiarists. There is, in a remote town in Vermont, a very quiet man who

is making a success in keeping bees. He sends his honey to market by tons. This season he has, so it is said, cleared $12,000 from his apiaries.

Mr. Heddon's hive is nothing new, as is shown in a recent number of "Gleanings," and is also shown by Mr. J. M. Shuck, and many years farther back by Mr. John M. Price.

If the title of the new book was "Success in Advertising" it would be in our opinion more appropriate. As an advertiser Mr. Heddon has been a success, not that he has expended the largest amount of money in such business but he has done more of it and at less expense than any other person in the bee business.

TOPICS OF GENERAL INTEREST.

KEEP THE HEALTH OF THE APIARY GOOD.

No apiary can be kept up to the standard in points of hardiness, vigor and general health, unless new blood is frequently infused. It is good policy to purchase a few queens each season for such a purpose, if for no other. So far as we have observed, all the animal kingdom shows marked and unmistakable evidence of degeneration when in-breeding is practised to any great extent.

First-class queens can now be purchased at such low figures, no one need let his apiaries deteriorate for want of new blood to improve them.

WHEN TO PUT THE SECTIONS ON.

The proper time to put the sections on is when the hive seems crowded with bees, the honey producing flowers abundant, and the weather favorable for a flow of honey. It is hardly advisable to put them on under other conditions. Very little is gained by putting a few sections on a hive containing a weak colony. By so doing, the temperature of the brood-chamber is lessened by the increased ventilation given through the sections. If a colony is not sufficiently strong in numbers to work in a full set of sections, the method given in the March number, page 52, should be adopted. That plan will be found to work well in any case.

CAN SWARMING BE PREVENTED?

There are several methods for controlling swarming, but none as yet have been devised to prevent it, unless it is by the "reversible" hive system. Even in that case, it would be a vast deal of trouble if the apiary contained several hundred or even but 100 colonies.

If such a practice is adopted, the hives must be reversed, at least, once, every three days, as all queen cells are sealed on the fourth day from the time they are commenced. And if a larva one day old is selected for a queen, the cell will be capped on the third day, though usually no queen cell is sealed until the fourth day, when, if the weather is pleasant, a swarm will issue. Hence the importance of reversing the hive often, to prevent swarming. When the cells are reversed at such an early stage in the development of a queen, the larva is destroyed and other cells must be made before the colony will cast a swarm. In our opinion, a colony treated in such a way several times would soon become discouraged and give up the swarming fever.

FASTENING FOUNDATION IN SECTIONS.

The following will be found a good method for fastening foundation in sections: cut the foundation in V-shaped pieces, and have at hand an iron pan containing a mixture (equal parts) of hot beeswax and rosin. If many sections are to

be prepared, a lamp should be arranged to keep the mixture at a proper temperature. When all is ready, dip the edge of the foundation lightly in the wax and quickly place it in the section. If properly done, the comb will adhere firmly to the section, and the heat generated by the bees will not loosen it, and not one piece in one hundred will break down. The most important part of this operation is in keeping the wax at the proper temperature. If too warm, it will melt the foundation, and if too cold it will not adhere properly. The right temperature will soon be learned by a little practice. This arrangement will not do to fasten heavy foundation in frames. For such a purpose, I prefer a thin piece of wood which should be placed on the foundation, and nails driven through it, and the foundation into the top bar, then the comb can be bent into the frame.

—The new side passage sections obviate nearly all the objections that can be urged against the use of separators. As the bees can go each side of the separators from one row of sections to another, all but about $\frac{1}{8}$ of an inch at the top and bottom edges of the separators, it will be seen at once that there is no place for the lodgment of propolis and hence no sticking in handling sections in cases or wide frames.

—The hibernation of bees is a settled fact when wintering in the best conditions. It is the key that will solve to a great extent the wintering problem.

—Bees usually begin to breed after the first free flight in late winter. If it happens about the 1st of February they begin then a small circle of brood in one comb. If the flight does not take place till about the first of March they will then begin to breed more extensively and soon have a circle six inches in diameter in one or more combs.

—Bees in warm cellars begin breeding earlier than is usually thought,—from the 1st and the 10th of February but commence only a small circle. From this time on they cease to hibernate perfectly.

APICULTURIST BEE FARM NOTES.

IMPLEMENTS FOR THE APIARY.

A few tools and appliances are needed in every apiary. Below will be found descriptions and illustrations of some of the most useful.

The little corn or whisk broom (Fig. 1) is a most convenient article and one used at the bee-farm, more than any other, except perhaps the smoker. When a frame of brood or honey is taken from a hive from which the bees are to be removed, we find the little article better than anything else for brushing off the bees. A brush made of bristles or feathers will irritate the bees, while this little whisk will not.

THE HONEY KNIFE.

The honey knife will be found a most useful tool during the entire season. Not only is it used for uncapping the cells when extracting is to be done, but it is just the thing for shaving the combs in the brood-chamber when they are bulgy, as they are apt to be, down to the proper thickness. Another use to which such a knife can be applied is for shaving off the cappings from drone-brood; and, by the way, this operation should be done when the brood has been capped about ten days. Have the knife sharp and after the cappings have been removed, suspend the frame with the hand, by one corner, and with the handle of the knife strike the lower corner

gently and the headless drone-brood will drop out. We usually remove the bees from the combs to be thus treated. Fig. 2 represents the "Peabody Honey Knife," which we have found as good as any for use in the apiary. There are none of them for sale now; but presume there are other knives equally as good.

AN ORIGINAL SMOKER.

When we first began to keep bees, such a thing as a "Bellows" smoker was unknown. In those days, the only thing known to us (now old fellows) was a tin pipe, illustrated in Fig. 3. The barrel of this pipe is about six inches long, seven-eighths inch in diameter, and has wooden pieces at each end.

FIG. 1.

FIG. 2.

FIG. 3.

The end through which the smoke is blown has a tin tube passing through it so that the smoke can be directed to any point. The pipe is held in the mouth, while the hands are at liberty. Although the Bellows smoker is far superior for handling bees, yet the old pipe has not lost its usefulness, as we find plenty of business for it every day rom May to Oct. The most important use for it is in introducing queens. For nearly thirty years we have introduced both fertile and virgin queens by fumigating the bees with tobacco smoke, and venture to say that no one has had better success by any plan known to beekeepers. Our method requires but a few moments for the operation, and not one queen in one hundred is lost. This plan is the only one by which a fertile queen can be removed from the largest colony and a strange queen introduced immediately. A full description of this method will be given in a later number.

The Bellows smoker need not be described here; nearly every beekeeper has one of some good pattern. A new one has just been put upon the market by Chas. Muth & Son. It is made of all metal, and as far as we can judge is a perfect smoker.

THE FOUNTAIN PUMP.

Where large numbers of colonies are kept, a small "force pump" of some sort is needed for sprinkling bees when they swarm. Not only can the bees be more easily handled, but they are less inclined to sting or to fly when wet. There are several kinds of such pumps in the market, but none of them are so good for sprinkling bees, as the "Whitman Fountain Pump." It is very substantially and nicely made. It is also very handy for washing windows, or for putting out fire on the roof of a building; instead of running for a ladder take the Whitman pump and a bucket of water, and the roof of any house of ordinary height can be reached.

The price of these pumps is a drawback to their general use. We would not take $50 for ours although it cost but $7.

OUR BEES.

By the time this number of the "Apiculturist" reaches our readers

we shall have removed our bees from the cellar. They will be treated as advised in the question and answer department. Early in May, twenty-five of the strongest colonies will be selected and used for queen-rearing. We hope to be able to ship queens by May 25.

QUESTIONS AND ANSWERS.

QUESTIONS BY OLD BEEKEEPER.

1. We will now suppose it is warm enough to place the bees upon the summer stands, and that they have had a good flight. What is the next step to be taken to protect the bees against injury? from cold and to induce brood-rearing?

2. Do you contract the brood-chamber by removing some of the combs and closing in with a division-board?

3. Do you contract the entrance? How much?

4. If you feed to stimulate, when do you begin? Do you use syrup or candy for food?

5. Do you let the bees have flour to work in when first placed on the stands?

[The object of the above questions is to learn just how to treat bees during the month of April, in order to get them in the best possible condition for the coming season.]

ANSWERS BY A. E. MANUM.

1. Remove all dead bees and surplus combs that the hive may be clean and the brood space contracted in proportion to the size of the colony, as warmth and cleanliness are both essential in early spring; also see that the bees have plenty of stores and a good queen, then *leave them undisturbed* for a while.

2. Yes, most certainly.

3. Yes, according to the strength of the colony, from $\frac{3}{8}\times\frac{3}{8}$ to $\frac{3}{8}\times 2$ in. (in summer my entrance is $1\frac{1}{4}\times 14$ inches).

4. I do not feed for stimulating further than to uncap the honey nearest to the brood. But were I to feed for that purpose, I would most assuredly feed honey if I had it, because bees can rear brood so much faster on it than with sugar, and besides the brood is more healthy and hardy.

5. No; it is not necessary *here* nor would I advise feeding flour in any locality. *Keep the bees quiet in spring.* Nature will provide pollen when needed.

[In a private note Mr. Manum says: "At the present writing my 726 colonies are all alive. I winter in chaff hives." We think the record is a hard one to beat. —ED.]

ANSWERS BY G. H. MARTIN.

1. If the bees are wintered in a cellar or special beehouse, keep them in until settled weather, or until soft maple and willows bloom. If the bees have wintered well, there is a good force to start business with. There is but little necessity to overhaul the frames only to see that they have plenty of honey and are tucked up warm.

2. If the swarm has lost a considerable amount of bees, contract the brood chamber.

3. Leave room for only a few bees. Depends upon the size of the swarm. A weak swarm needs but space for one or two bees to pass.

4. Feed only where the bees are short of stores. I use candy made of pulverized sugar and honey.

5. If bees are set from a cellar at the proper time, they will get pollen from natural sources. Bees wintered in chaff hives could profitably be fed flour to advantage, if the weather allowed it. Water can also be given to bees in early spring to keep them in the hive contentedly during inclement weather.

ANSWERS BY DR. G. L. TINKER.

1. The next step is to see that they have plenty of stores for brood rearing. If the stock of food on hand is small, instinct teaches them, when no honey is coming in, that the danger of starvation is too great to warrant the rearing of much brood.

2. If the colony has been well wintered, and there is a fair colony of healthy bees, it is not at all necessary to contract the brood chamber. If the bees are few in number or diseased, then contract, prevent all upward escape of heat, and be sure to carry the colony every cool night into a warm, dark room, and keep them there when the weather is too windy or too cool for safe flight.

3. It is best to contract the entrance of all colonies to three or five inches according to strength.

4. Bees having plenty of stores do not need stimulating. We prefer to feed, when necessary, sealed honey. If we have nothing else we would feed candy when it is too cool for the bees to fly, and warm syrup at other times.

5. If no natural pollen is to be had, and the weather is suitable for bees to work, then flour should be placed in tin

pans with a piece of old comb near, for the bees to work upon. We place the pans on old newspapers, else the bees will scatter the flour over the ground and gather up much dirt with it.

ANSWERS BY J. E. POND, JR.

1. Contract to the size of colony, that is, leave only as many frames of comb as the bees can cover fairly. Close top of hive tightly so as to get rid of all upward ventilation. Pack tops with quilts or blankets, so as to retain all heat generated. The moisture thus caused will save the trouble of leaving the hive for the water needed for brood. If there is an ample amount of stores, uncap a few cells daily; if not, feed just enough to support bees and brood. Handle the frames just as much as is actually necessary and no more.

2. Yes, sometimes. I am in doubt, however, whether anything is gained by so doing unless the spring is severely cold. I have had good results from leaving the full complement of frames in a ten frame L. hive.

3. I do not contract the entrance except to prevent robbing, except with a very small colony. The entrance should be proportioned to the size of the colony always. The full width for ten well covered frames; a smaller number in proportion.

4. I don't take much stock of late in so-called stimulative feeding, as I find but little is gained by so doing. If the hives contain stores in plenty, brood rearing progresses as rapidly as is economical. If there is lack of stores, feed enough to supply the wants and needs of the colony.

5. I have done so; if I had frames of comb containing pollen I should give them in preference. I have found at times that bees will take flour—rye preferably—and that freely; at other times they will not. No harm is done by feeding it, and good may result, so as a rule I should advise it till natural pollen is being gathered.

My April treatment of my bees will depend largely upon the season, and their condition. I can give no rigid rule, as I use none. The general principles shown in above answers, if followed, will give good results; at least they do so with myself.

ANSWERS BY G. W. DEMAREE.

1. Your question, or rather compound question, is one of practical import, and hence of deep interest to all of us.

I winter my bees pretty much in the same manner each season. They are left in at the close of the honey harvest. If they have plenty of stores they are not interrupted at all. Early in March, if the weather will admit of handling bees, I examine every colony, being very careful not to irritate the bees more than can be helped. The hives are cleaned out if they need cleansing, and the colony is located in the south side of the hive. Cover all with a dry, warm quilt and newspaper over that, and weight down with some boards or shingles to confine the warm air. I regard this as being of much consequence.

2. No. I have discontinued that practice. A good, straight comb is as good a division board as I can get.

3. If the colony is under size, I do to one or two inches.

4. I do not feed unless the bees are short of stores. Extracted granulated honey rolled in coarse flour and laid on the frames under the quilt. Oil cake meal is the most powerful substitute for pollen that I have tried.

5. Yes, if there is warm weather before natural pollen is to be had.

ANSWERS BY IRA BARBER.

1. I do not protect them from cold to induce brood rearing, and have never had any fears but what they would rear all the brood necessary to keep them in a flourishing condition.

2. I never contract the brood chamber, or used division boards.

3. I have two fly holes in all hives, and close the upper one in all hives that do not occupy all the combs from side to side, and top to bottom.

4. I do not feed to stimulate brood rearing, until about ten or fifteen days before clover bloom. At that time, there is always a dearth of flowers in this section, and a large portion of the colonies will by this time have all the honey consumed, that was left after wintering, and if not fed, brood rearing would soon cease. I would use the lump feeders, and keep the bees feeding as well as possible until there is something for them to do. If the feed is given as thin as they will take it, no robbing will follow, nor will they store more than is required for immediate use. I prefer maple sugar for this purpose.

5. I do not give flour, as we have plenty of pollen whenever our bees can fly to gather it. My bees are in the cellar as a rule, until the last of April or first of May.

ANSWERS BY HENRY ALLEY.

1. After having a good flight, I would, as soon as the weather is warm enough to do so without injury to the bees, thoroughly cleanse the hives of all dead bees and mouldy combs, or whatever might be detrimental to the health of the colony. Would stop all upward ventilation and pro-

tect the bees and combs by placing some warm material over the frames, then cover all with a close fitting cap.

2. If the colony is small, would confine the bees on a few frames, say about five.

3. Contract the entrance to one-half inch if the colony is a weak one, and leave it open about two inches where a colony is strong.

4 I advise feeding a small amount of pure honey to stimulate brood rearing.

5. If the weather is pleasant and the bees flying freely and seem to be searching for pollen, I think something should be given them as a substitute, until natural pollen can be had. I have found wheat flour an excellent thing for the purpose. There is an advantage in giving wheat flour. When placed in some warm corner of the apiary, the bees will, if the sun shines only for an hour, take enough into the hive to last them several days. Cotton seed meal is also said to be a very good substitute for pollen.

A BUNDLE OF INQUIRIES.

London Bridge, Va.

EDITOR AM. APICULTURIST.

I am *not* a candidate for literary honors, but I am anxious to know which race of bees is generally considered by the majority of beekeepers to be the best and most profitable. This question is very important to beekeepers who have a number of hives of native bees as I have, which they wish to improve by introducing other bees of the best race; and now, to arrive at a conclusion on the question, I would like to ask the following questions to be answered by an authority, such as Mr. H. Alley or one who has had the opportunity of judging.

1. Which race has the most prolific queens? that is, which queen will occupy the greatest number of brood frames, and how many?

2. Which is the most gentle race?

3. What bees have the longest tongue?

4. What bee can carry the most honey?

5. If a strong colony of each race are all placed side and side in the same apiary, everything being equal, which will gather the most honey?

6. What hive is most used? and what one do you use in the experimental bee farm?

R. D. A.

ANSWERS BY OLD BEEKEEPER.

1. We have found the Syrian queens the most prolific of any race we have tested. They will use every available cell for brood. While queens of this race are very prolific, many do not consider them the best bees for profit. Syrians and Italians crossed are far superior to the pure Syrian in every respect. We would select the Italians for their mild disposition, and the Syrians for vigor and hardiness. These two qualities combined produce a most desirable strain. Syrian drones should be used to mate the Italians, though it would make but little difference which way they were crossed. We have known this strain of bees to occupy fifteen L. frames with brood.

2. The Italians and Carniolans are the most gentle races.

3. Mr. S. M. Locke has a very ingenious instrument for measuring the tongue of the bee. We believe it has not been tested, and so far as we know no one can answer this question correctly. It has been said that the Italians have the longest tongues, as they work and gather honey from the seed or second crop of red clover. This does not demonstrate that the tongue of the Italian bee is longer than that of other bees, as we have found bees of nearly every race and strain working upon red clover, equally as freely as the Italians.

4. The only reply we can make to this question is to say in our opinion the largest and strongest bees will carry the most honey. The Syrians and Italians crossed combine these two desirable qualities.

5. The strain of bees just mentioned.

6. The standard Langstroth hive is preferred to any we have tested. Last year we sent out circulars for information regarding bees and honey. One of the questions was this: "What style of hive do you use?" Ninety per cent of those who replied said they used the standard L. hive, and also stated that most of their beekeeping friends used the same. There are other good hives in use, but none possess so maay valuable and desirable features as the Langstroth. In order to make a success of any style of hive, one must learn from experience how to use them.

BEES ROBBING FROM EACH OTHER.

Oneonta, N. Y.

I am troubled some with bees stealing from each other, please tell us in the "Api" the best remedy for it and oblige,

R. E. MERVIN.

ANSWER BY OLD BEEKEEPER.

Contract the entrance to the hives to about two inches, provided the weather is not too hot, and no honey is being gathered. In our opinion but little robbing is going on in this apiary or there would be more trouble than his question seems to imply.

Burnham, Maine.

1. Would it do to sow oats or other grain with Bokhara clover the first year?

2. Would Bokhara clover or borage do well on burnt land that would be somewhat weedy?

3. How much borage seed to an acre?

4. Does borage hold the ground by seed itself?

5. Is it a bad weed?

O. A. DODGE.

[We will deem it a favor if any one who has had experience in such matters will reply to the above question for the May No.—Ed.]

—Send us questions for answers, and we will get the right person to answer them.

LETTER BOX.

A GOOD REPORT FROM A BEGINNER.

Mosiertown, Pa.

The following is my report for 1885. Packed in fall of 1884, five colonies. Lost one, which was packed in leaves, in wintering. One came through strong; three weak, one very weak—not a quart of bees, would not cover one space between frames. Put in between division boards in the spring and thought if it would build up by fall it would do well. Yet from that (the parent) colony took 47½ pounds comb honey, and had a good swarm, which gave but 15 pounds surplus. Took in all, 277 pounds surplus, and have ten good colonies packed out doors in chaff. I am but a beginner in the business, but will do my best to succeed. Success to the "Apiculturist."

GEO. SPITLER.

NO LOSS OF BEES UP TO FEB. 8.

Wardstown, W. Va.

The weather has been very cold here. Thermometer registered 20° below zero the fourth of this month.

My bees are wintering well. I have not heard of any losses of bees in this neighborhood yet.

C. L. EAKIN.

St. Andrews, Ont.

EDITOR AMERICAN APICULTURIST:

DEAR SIR:

The queen you sent me as a premium came to hand last May in splendid condition. I at once placed her upon a frame of sealed brood that was rapidly hatching, and the whole was then placed in a large wire case and inserted with the colony to which I wished to introduce her. In three days she was busy at work laying, and by the end of the week she had quite a nucleus. I then removed the frame with the queen and bees, from the cap, and placed them in the hive and all was well. In all

the plans for introducing queens, I have not noticed the use of this large wire cap that holds a whole frame for that purpose. Its use involves a little trouble, but it is a very safe plan. E. W. PANTON.

WELL APPRECIATED.

Pawtucket, R. I.

GENTS:—I congratulate you on the Feb. No. of the "Api." It is full of interest, and the answers to my questions are worth the subscription price for one year to me. Bees are all alive at present and doing well.

SAMUEL CUSHMAN.

ENCOURAGING WORDS.

Paris, Ont.

EDITOR AM. APICULTURIST:

I should indeed prove myself ungrateful if I did not in some way acknowledge the great value that I received for my *two dollars*, that I sent you about one year ago. Not only did I receive Vols. 1 and 2 of the "American Apiculturist," *handsomely bound*, also the journal for 1885, together in due time, the beautiful queen, which I unfortunately lost while introducing; but that was no fault of yours, for she arrived all right, and through my inexperience I lost her, which I very much regretted for she was a fine Italian. Your journal I consider one of the best, and it should be in the hands of every beekeeper, especially the *amateur* whom it leads along from one subject to another, until he is a *budding professional* before he knows it. I had good success with my bees last season after a cold and backward spring.

F. D. MITCHELL.

A GOOD REPORT FROM A BEGINNER.

Waterville, Me.

February No. of the "Api" at hand, and I hasten to renew my subscription as I could not get along without it.

I started in the spring with two colonies of bees and now have nine good, strong ones (or they were so when I put them in the cellar) and I had taken away from them nearly 400 lbs. of honey, which I thought was pretty good for a second year in the business. I received a queen from you about the middle of June, and I put her in a hive with two frames of bees and a little brood. When fall came, they had built up a very strong and beautiful colony. I took off twenty-eight one lb. boxes and left enough for them to winter on. I think that was doing well. ADDISON DOLLEY.

SAMPLE COPIES.

We are sending out a few sample copies each month, hoping those who receive them will appreciate our efforts to publish a good bee-journal and at once send us their subscription by return mail for one year. If not prepared to remit the amount for a whole year, we will accept twenty-five cents in postage stamps, and mail the Apiculturist three months to any address. Send at once.

If you are well pleased with our journal, speak to your beekeeping neighbors about it, and also send us their address, and a sample copy will be sent them.

THE BEST OFFER YET.

Last season we offered one of our best queens to any one who would send us a club of five (5) subscribers and five dollars. This offer brought us a large number of subscriptions. The same offer will be continued for 1886. Four hundred nuclei will be used in our queen-rearing apiaries, and to the person who will send us the above number of subscribers we will give one of the finest golden yellow Italian queens that can be selected from our 400 nuclei, or a queen of any other race reared at the "Apiculturist Bee Farm." We have no doubt that the person who receives one of the above queens would refuse ten dollars for her.

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A Journal deboted to practical Beekeeping.

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For the American Apiculturist.

THE BROOD-CHAMBER FROM APRIL TO AUGUST.

BY A. E. MANUM.

USUALLY in this latitude bees have their first spring flight about April 1, and it is at this time that I make the first examination of each colony to ascertain its immediate wants. This work should be done very rapidly to avoid any long exposure of the brood-nest.

My object in opening the hives at this time is as follows: first, to see if the bees have honey enough to last them two or three weeks; if not, a comb of honey is given them.

I find in my experience that bees, like other living creatures, are unequal consumers of food, as some colonies require more food than others of equal strength, hence, the necessity of this first examination.

Second, to see that no dead bees are lodged between the combs.

This done and being satisfied that all is well within the hive, I replace the cotton sheet over the frames and over this I spread a covering of enamelled cloth, then return the packing over all, tucking the bees up as nicely as possible. My object in putting the enamelled cloth over the bees, at this time, is to prevent, as much as possible, the escape of heat and moisture, as both are essential in order to carry on brood-rearing successfully.

Having done everything for the bees that seems needful, they are left to themselves for a time, and I do not open the hives in early spring any more than is absolutely necessary.

Sometimes during the last half of April I select a warm day and look the bees over again, and reduce the size of the brood-chamber by the removal of such combs as the bees cannot well cover. I consider it of great importance, that the colony should have no more room at this season than the bees can occupy.

About the first of May, if the weather permits, I find it advantageous to look the bees over again, as pollen is coming in freely; breeding should be going on quite rapidly, and as our honey crop depends largely upon the amount of brood reared during May, it is to our advantage that we put forth every effort possible to secure a large amount of brood.

We find at this season that our hives have become greatly depopulated, the old bees having nearly all died off and nothing but young bees are left to care for the brood.

Now, then, if we have not given our bees proper care during April, and but little brood is hatched, some of them will be in a very weak condition and unless assisted they will be liable to dwindle.

I have practised several methods of management with weak stocks, but I will here give the one I prefer, all things considered, as it is the most simple; it is as follows. Go to a strong stock and take from it a comb of hatching brood with adhering bees; give it a few thumps with the thumb in order to cause the older bees to take wing and return to their hive, while the young bees will adhere to the comb; then place this comb of hatching brood and bees in the centre of the cluster of the weak colony; at the same time uncap some honey and place it near the cluster, removing all extra combs that the bees cannot cover. Replace the frame of brood with an empty comb which the queen will very soon fill with eggs.

It sometimes occurs that such light stocks are too weak to care for a whole card of brood; in such a case I simply give it a few young bees that have never had a flight. This operation can be repeated every few days until the colony is sufficiently strong to be out of danger of dwindling.

During May we usually go over our bees once a week, the work of the second week being nearly the same as the first; hence I pass it. By the third week our work usually increases, as we now find very many colonies that will require more combs.

In giving bees more combs it is sometimes (though not always) advisable to spread the brood-nest and place the empty comb in the centre. My advice is to be very cautious in spreading combs too early, as at this season of the year we are liable to have sudden changes in the weather which should be guarded against.

I often, during the month of May, when giving more combs, place them outside the cluster, because by so doing I am sure that if a sudden cold snap should follow, the bees will not be obliged to leave their brood which they might do had the spreading method been carried too far. It is well enough, however, later in the season, and sometimes advisable, when the hive is not already filled with brood to spread it, thereby compelling the queen to fill every comb with eggs.

It not unfrequently occurs in my locality that bees have to be fed at this season of the year, because I have previously compelled them to consume their honey in brood-rearing.

Feeding may seem expensive to some, but it is like "casting our bread upon the water;" but with me it pays.

Now, if we have given our bees proper care and the weather has been favorable up to the tenth of June, the combs will be filled with brood and well covered with bees. A glance at the brood-nest will show us that the swarming season is at hand. At this point my method of management changes very materially; now, instead of trying to induce brood-rearing I try to discourage it, because as our honey flow ends about the twentieth of July and as it takes twenty-one days from the egg to hatch a worker bee, and then ten or fifteen more before it will gather honey, it will be seen that bees hatched from eggs lain after June 15 or 20 will be of no profit to the apiarist. The amount of honey consumed in rearing brood, together with what they will eat after the honey flow is over, will overbalance

what little honey they may perchance gather at the close of the basswood bloom. Therefore, it is very unprofitable for me to rear an over abundance of bees after the above date. Now, to prevent *this*, gradually contract the brood-chamber by reducing the combs and inserting a division-board at each side of the brood-chamber.

I have given dates here, but it must not be expected that they will apply to every season or locality. The apiarist must use discretion, basing his operations upon the earliness or lateness of the season.

Some argue that bees work for nothing and board themselves; yea, more! they expect them to take care of themselves. But my experience teaches me very differently. Though I would not advise too much handling during unfavorable weather, we must use judgment in all things, in the apiary as well as on the farm. The farmer would not think of planting corn out of season, nor of making hay during unfavorable weather. And so with the beekeeper: he must use judgment and do his work properly and at the proper time. I always try to get my bees to swarm in June and prevent it as much as possible after the first of July.

At the close of the basswood bloom preparation for winter commences. All old queens are superseded with young, vigorous ones.

The combs that have previously been removed are now replaced by changing places with the division-boards, in order to give the bees more room to cluster and the queens more room to lay.

In giving my methods and experience I do not claim infallibility; these are simply the conclusions I have arrived at up to the present time and I am better satisfied than ever before that I have not learned it all. I am trying, however, to progress and in this attempt I am not so selfish as to wish to journey alone. But I am willing to shed what little light I have that others with less experience may be benefited thereby and join me in the attempt to conquer ignorance and acquire more knowledge in the mysteries of beekeeping, that we may be able in the future to secure more of that rich nectar so bountifully provided by nature.

Bristol, Vt.

For the American Apiculturist.

USE OF THE SMOKER.

By A. Norton.

Commonplace things we often pass by in our search for the unusual. Yet commonplace things are most practical, and even humdrum affairs may be dwelt upon to advantage. The use of the smoker is one of those everyday features of beekeeping that approach closely the character of humdrum, and to write an article about it may strike one with much the same impression that the writer once felt when a lecturer at a teacher's institute was talking on "how to use chalk." Yet, even the smoker is wrongly used; and no wrong, however small, but needs correction.

Often have I seen an operator while manipulating a colony of bees, deluging the poor creatures with volumes of smoke, regardless of the disposition which they show. I have seen one man stand by with a smoker while another examined a hive, and he would seem to amuse himself by puffing away with the bellows and ever and anon sending a stream of smoke down among the already stampeded and thoroughly conquered bees throwing them into confusion and fright, perhaps even driving them out of the hive through the entrance below.

The smoker is thus often indiscriminately used. Now the one idea of this article is to show that, as with

even more dignified subjects, there is science and reason in handling the smoker. Different bees have different tempers; the same bees have different tempers at different times. Moreover, there are different objects in view at different times while using a smoker. I have seen hybrid Syrians and hybrid Cyprians at times when smoking only goaded them to greater desperation, like the use of little arrows on a mad bull. No matter how much one smoked them they would spring fiercely in air at every puff and settle in little clouds over both smoker and operator. I have handled such colonies again under the same conditions and often at nearly the same time without the smoker, patiently receiving such stings as must come, and received far less annoyance than had the smoker been used. Blacks under the same smoking would have stampeded like sheep, after a puff or two, and each additional smoking would have driven them more and more on the outside of the hive. If you are intending to examine the condition of a hive, find the queen, etc., you cannot go too quietly about it. It is well to open the hive without smoke, receiving a few stings even, and see if the bees are then likely to subside. Should they crowd up in force, a few very faint puffs causing the smoke to just breathe by them will usually cause them to back off in an unconcerned way and retreat between the frames without exhibiting alarm. A degree worse of irritability, if shown, may generally be quelled with vigorous puffs that send the stream of smoke horizontally clear across the frames without any of it going between them into the hive.

Then handle your bees carefully and use smoke gently wherever they again come to the attack. If you are extracting honey, where you want to do hurried work and dislodge the bees rapidly from the combs, or making artificial swarms, or doing aught else where you want them to fill themselves with honey, then it is well to use smoke abundantly, and as soon as the cover is removed from the hive. A copious application of smoke renders the bees less tenacious to the combs; and a smart jar then dislodges them so thoroughly that but few are left to be brushed away.

In extracting, it is better to jar the bees into the super with comb scarcely elevated from it. To sum up, then, use smoke as much as is needed, and no more.

Study your bees, and learn to know just as quickly as the hive is opened how they are likely to act. And then you will be able to use none, little or much, in that most essential way, appropriately.

Gonzales, Cal., Mar. 24.

For the American Apiculturist.

SUCCESS IN BEE CULTURE.

By G. W. Demaree.

Every few years the whole bee camp is stirred by the cry of the "coming hive" and the "coming bee," and beginners are led to believe that "success in bee culture" depends on some peculiarity about the bee-hive, or some peculiar "dash" about the bees. I could not tell how often I have seen this delusion practically illustrated in my own apiary. Persons visiting my own apiary to "learn something" about the modern methods of bee culture, are unable to see anything but my "new section cases," my "slotted top-bar" frames, etc. The fact is the new *conveniences* used in the apiary captivate them to such extent that the essential cause of success, viz., *proper management*, is entirely lost sight of.

Do the facts show that those persons who go on proclaiming from year to year that they have invented the best hive, and that their last hive is always the best one, are the persons who succeed as practical honey producers? I think not; I am sure that there is no convincing evidence that they excel as honey producers. Some of them have made money; but if they had been dependent on the honey crop produced in their own apiaries they would look no sleeker nor fatter than some others do.

The purpose of this article is to inquire into these matters a little and see if we cannot help the beginners in bee culture to avoid the snares and delusions so temptingly laid before them. Facts are stubborn things and will stand firmly in the face of any amount of delusion if they can be seen plainly.

Who are the successful beekeepers known through the bee periodicals? I can call to mind a few of them. Dadant & Son, Hetherington, Oatman, Doolittle, L. C. Root, Manum, Poppleton, Hall, Bingham, Forncrook, John T. Connley and a host of others which I do not name, having selected the above because they use hives differing from each other as much as modern frame hives can well differ in nearly every respect. And the bees employed by them differ as much as our bees mixed and pure can well differ, and yet all these men have made bee culture a success. Do not these facts show that the *hive* alone does not bring success?

The same rule will apply to winter management of bees. The facts show that those beekeepers who try to write learnedly about the "causes of winter losses" and blow about pollen and sugar syrup have been the greatest failures heretofore.

I conclude then, that those beekeepers who always have the "best hive," though they make radical changes every year or two, who are continually "solving the winter problem," but changing the "problem" every year or two, who must have bees with a "slight dash" of something, though they stick to that only as long as it will win, who throw away old bee implements with weary disgust and anon resurrect them from the rubbish heap and claim them as a "new invention," these are not the men who get the big honey crops. The facts show that they are not the men who succeed in bee culture.

I would like to impress the mind of the inexperienced beekeeper with the fact that "tools" do not make the mechanic. Knowing what I now know from long experience, I have no hesitation in saying that the plain, uncomplicated standard hives now in use will never be excelled by any new invention, so far as simplicity and handiness are concerned when learning the first lessons in beekeeping.

Better, "all purpose" hives may be invented in the future, but such a hive will not be so simple and easily understood as are the standard hives of the present day. Some persons have remonstrated with me for writing what they call "sweeping charges" against patent hives. I am not opposed to patents if they cover new and valuable features in hives and apiarian implements. Let the inventors of the patent hives show us by practical tests that the new patent hives give a larger yield of honey than do the old standard hives, that they are manipulated with less cost of time and labor, that they are cheaper as to first cost; in short, that they are enough better in every respect to give fair returns for royalty demanded for the right to

use them. If they can do all this I will be among the first to recognize them as worthy of support.

We want clear-cut experiments. There is not a single beekeeper of ten years' experience in all the land who will tell you that patent hives in the past have contributed to the success of bee culture, saving the one invention of Mr. Langstroth, which was patented.

Christiansburg, Ky.

For the American Apiculturist.

THE APIS INDICA.

BY A. BUNKER.

THE *Apis Indica* has been now pretty fairly tested as to its economic value, by several gentlemen in India as well as by myself in Burmah, and it may be pronounced worthless as a honey gatherer, though as a study in natural history it will always be interesting. This bee is so good-natured that it will tolerate all sorts of insects in the hive with itself. Wasps, cockroaches, ants, lizards, etc., are frequently found domiciled with this bee. Hence, it makes a feeble resistance to moths, and its combs are almost sure to be riddled by the moth during the rainy season. The natives can always secure a few pounds of honey by preparing a receptacle for these bees, in any convenient place. Again, as these bees are very numerous, breeding all the year round, when once they have become accustomed to a good place for their nests, they return to it season after season. Hence the natives have "bee trees" to which they attach some value, as these bees regularly return to them each season, when a little honey is stored for the owner.

Mr. J. C. Douglas of Calcutta, has discovered, recently, a race of bees in the Punjab, in the Hazara district, of identically the same size as the European bee. It is not yet known how valuable this bee is; whether it is a good honey gatherer, or will resist moth like the European bee or not. But it must prove most valuable as a means of introducing the European bee into India, since careful experiments have shown that Mr. Frank Benton's method of shipping queens is available for India also. With stocks of this Punjab race of bees, and imported queens, one should be able to build up an apiary of European bees rapidly in this land where flowers are in bloom the whole year round.

I am not yet satisfied with my experiments with the *Apis dorsata*. I have been comparing the honey of the *Apis dorsata* with that of Scotland and France, specimens of which I have been able to secure, and the little folks of the household prefer the former. The flavor of the *Apis dorsata* honey is slightly different from the two specimens of European honey and color lighter. There is one native village near here called the "wild honey village" where at least forty barrels of honey are gathered from the *Apis dorsata* each year. The honey when properly gathered keeps well the year round, and though I am not certain on this point, does not crystallize like European honey. I am promised another swarm of *Apis dorsata* for further experiment.

Tongho, Burmah, Feb. 18, 1886.

For the American Apiculturist.

NOTES FROM ENTERPRISE APIARY.

BY C. M. GOODSPEED.

I got a little anxious to see how my bees were, so I set out a few colonies to-day for a flight. I covered the ground with straw and set the hives down on the ground. The wind could not hit us, the straw was clean and dry and much

better than the wet ground. I found all I set out in fine condition except colonies that were made late in the fall, by uniting nuclei. These were used for queen-rearing and I know contained a large proportion of old bees. They show a large amount of dead bees, but no signs of dysentery or disease of any kind.

I "called the roll" of the remainder to which every colony responded, and as those I carried out for a flight were my poorest stocks last fall, I can safely say my bees have wintered well and without loss. Now, can I spring them without loss? I will try. I shall not set any more out even for a fly until soft maple opens, unless they get restless. My trial swarm I find has consumed eight pounds of honey since being put into winter quarters in November last. I dislike to handle a colony for a few days after being set out of the cellar; they are quite apt to ball their queen or sting her in their excitement. But I wanted to know what the consumption of honey was, with an average stock entirely undisturbed, as I knew a fly would increase the consumption. The weight was taken in this manner: the frames were taken out, bees all shaken off and then frames with honey and pollen weighed; so the eight pounds includes all they ate of both honey and pollen, and my bees had plenty of the latter this year. I wintered this year on basswood honey mainly. I selected a few stocks, tiered them up and instead of extracting, set the frames when filled and capped, one side, to build up with last fall.

Friends, if honey is as good as sugar to winter on, let's use it. Would not that be a good way to keep up prices?

I believe good clover or basswood honey equal to any thing for bees to winter on, but I do not really fancy fall or late gathered and poorly ripened honey for myself or my bees either.

Thorn Hill, N. Y.

For the American Apiculturist.

POISON HONEY.

BY A. M. WILLIAMS.

Some kind friend has just sent me a copy of the "American Apiculturist" for which I am very thankful. It contains a large amount of useful information and appears to be very reliable. I was especially interested in the questions by Sereno Edwards Todd, and for the very good reason that I was the first to bring the subject of poison honey to the attention of the public. Although Mr. Todd has an opinion on this subject, he appears as a seeker after the exact truth, and for that reason he calls for "positive knowledge and not for opinions."

I propose to make a few comments on his questions. "Do bees ever store up poisonous honey?" Yes. This fact has been known from the days of Xenophon the historian to the present. But we need not go back to ancient times, nor travel a long distance for evidence. I have the honey on hand to show, also the plants that yield it and a multitude of people to testify to it. I can tell how to test this honey without danger and this will answer question 4. This honey has a peculiar taste as if it contained some pepper and makes an irritation of the throat with a tendency to cough after swallowing. This is followed by a sickness to the stomach and headache, and, if much is swallowed, by vomiting. Now a very little of this will not do any permanent injury, and enough can be taken to prove its properties, and one can afford a little unpleasantness for the sake of proving an important fact.

Question 5 is answered positively in the negative, and I am ready to

prove it. What plants furnish poisonous honey? The British Encyclopedia gives a list of such plants. If honey will poison a man, will it poison a bee? I should be glad to see an answer to this question from a man who knows, but would care nothing for guess-work. I have some evidence but it does not yet amount to a demonstration. I have sold poison honey to neighbors to feed bees; they claim to know that it will not hurt the bees. They know positively by years of experience and observation that it will poison every man, woman and child that eats it and still feed it to the bees. That a thing will poison insects which is not hurtful to man is a well known fact and there is nothing absurd in supposing the converse to be true. As to the idea that a person may get sick on good honey and think it poisoned, this in individual cases may be true. Here in our neighborhood is a plant I have seen nowhere else; its existence seems to be limited to a few square miles. I suppose as good honey is raised on Long Island as anywhere, but in our section we can only expect to eat the honey that is gathered after the kill-calf is out of blossom. I still have hopes of raising my own honey, although last fall in disgust I sold every bee. It is more than forty years since I commenced beekeeping. Kill-calf honey will make any person sick that eats it. It is said that it is not poison because it don't kill. It is in only a small portion of cases a person dies by poison, too much or too little is not liable to be fatal.

Syracuse, N. Y.

AN INTERESTING RECORD.

By R. M. Stevenson.

I have been keeping a record of floral bloom for the last five years, and I find that the blooms mentioned below appear about the dates named.

Those producing pollen and no honey are:

Water rushes, Feb. 18; Kilmonock willows, Feb. 20; maples, March 17.

Pollen and honey:

Peaches, April 1; pears, April 14; plums, April 20; apples, April 22; quinces, May 1; white clover, May 18.

I winter on summer stands, and never have lost a colony. Some winters are mild compared with others of the same latitude. The past was the coldest known since 1857, which was 12° or 15° above zero. I see by the papers that at times it has been colder in Georgia and Florida than it has here.

One word for the "Api." It grows and improves all the time. Notwithstanding its age, it ranks as the best *practical* bee-paper.

Pocomoke City, Md.

INTERESTING FACTS REGARDING THE WINTER PROBLEM.

By O. F. Winter.

I present a few facts concerning the amount of honey good strong colonies of bees will use during the first four months of winter. I weighed my hives the first of October and marked the weight of each on the hive. In February I weighed several of them again and they had lost from eight to thirteen pounds, an average of ten pounds each. These were strong stocks on Langstroth frames, in single-walled hives, six brood-frames and a frame of sections on each side.

How much will an average colony in a chaff-hive or one in the cellar consume in the same time? What time in winter does a good colony begin to rear brood? I had a colony robbed of their stores

the first of January. I found brood from the egg to that nearly ready to hatch; the brood must have been started by Dec. 15. The bees were in a single-walled hive, the same as described, and set in the shade in the woods. I think there must be some little secret about wintering bees we do not all understand.

One year ago I wintered seventy colonies in the manner above described, and all came out strong in the spring, except four or five which lost their queens.

How cold would it have to be to freeze a good, healthy colony of bees in a single-walled hive? I have about twenty-five colonies that are in two- and three-story hives, all open from bottom to top; they are in fine condition, notwithstanding the fact that the temperature has been as low as ten degrees below zero.

I had in the fall sixty-four stocks; all alive to date except one; wintered on summer stands, in single-walled hives.

Feb. 16, 1886, *Winterton, N. Y.*

For the American Apiculturist.

COMB vs EXTRACTED HONEY.

BY JOHN T. BEECH.

I HAVE noticed in a good season for honey (all other conditions about equal) that with the "L" hive and old combs for the extractor and $4\frac{1}{4} \times 4\frac{1}{4}$ sections used for comb honey, that the hives for extracting will give from two to three pounds more honey than the hives run for comb honey in a poor season. I found the difference to be still greater last year. In this vicinity the season was very poor for honey, no surplus stored from any source but basswood and that not the best. My experience is about as follows: fifteen hives for the extracted mostly old combs (four did not work in the upper story) leaving eleven to extract from. I took about 900 lbs. at three extractings from basswood, twenty-five for comb honey; 1400 1-lb. sections, about 400 had worked out starters from last season; the balance had a small piece of foundation for a starter in each. Result: about one hundred salable sections mostly all very light in weight, from which about 200 lbs, could be extracted although I prefer to let the bees clean them out early in the spring as the extractor mutilates the starter.

I have always considered myself satisfied when I received double the price of extracted for comb honey, but hereafter the difference will have to be greater or the comb honey will be scarce and extracted honey more plentiful at the "Burnt River Apiary."

Burnt River, Ont.

For the American Apiculturist.

THE BAY STATE REVERSIBLE HIVE.

BY HENRY ALLEY.

LAST fall I promised the readers of the "Apiculturist" a description of a reversible hive then in process of construction, and which I intended to have completed in time for the season of 1886. The hive is completed, and a brief description of it may not be out of place at this time.

The hive as now made has but eight frames, same size as the standard Langstroth, but the frames are "closed ends" and are so wide that when the frame is in position they are self-supporting. On either side the frames are $\frac{1}{2}$ inch boards, as wide as the depth of the frames and three inches longer. These boards serve

as sides to the hive, and hold the frames in place, and the entire brood-chamber is made solid by two bolts, which pass through the ends of the side-boards and by the ends of the frames both front and rear, and by a few turns of the thumb-nut the brood-nest is made solid as a block, so that it can be easily and quickly reversed at one motion, and in less than ten seconds. A slatted honey-board, such as I have used the past eight years is placed over the frames for the sections to rest on, and to keep the bees from fastening the top of the frames and sections together.

The section-case is a new device and unlike any other in use so far as we know. There is no bottom or top to it. It is similar in principle and construction to the brood-chamber, as it has sides through which a bolt passes and which holds the sections firmly in place, and they are as easily and quickly reversed as the brood-chamber. The whole arrangement is exceedingly simple, and all hard or difficult work to remove sections from the case is done away with.

By using this section-case "tiering up" may be practised to an unlimited extent. The sections are protected from the weather by a topboard. The above is merely a description of the inside of the hive. If a colony is to be wintered on the summer stand in one of these hives, an outer case must be made two inches larger all around than the brood-chamber, so that chaff may be used.

I will give some of the advantages this hive has over those in use.

1. It has closed end frames, which some of our prominent apiarists claim as one of the best features in any hive. Any particular frame can be removed from the brood-chamber without disturbing those adjoining.

2. Its whole weight complete, section case and brood-chamber, is less than 15 lbs.

3. It requires less lumber and labor to construct one than it does for any hive in use, and consequently costs less than any hive extant.

4. There is none in use so well adapted for a two-story hive as this one, as two sets of brood frames could be used on one bottom-board or the frames may be "tiered up" several stories.

5. Anywhere from four to an unlimited number of sections can be placed on the hive at one time.

This hive and no other will revolutionize beekeeping, and we only claim that it is better than the standard Langstroth in that it costs less, and the brood-chamber and combs are easily and quickly reversed.

The Bay State hive is in all respects strictly a simplicity hive, as there are no clap-trap arrangements about it, and it is not possible to construct one more simple and cheaply, and still retain so many essential features.

Wenham, Mass.

For the American Apiculturist.

SIX YEARS OF BEEKEEPING IN SOUTHERN CALIFORNIA.

BY T. F. ARUNDELL.

THE past disastrous season in southern California leads one to doubt the correctness of the prevailing impression that it is the "Eldorado" of American beekeepers; and it is undoubtedly true that a larger proportion of our population have tried and abandoned beekeeping than in any other country on the globe.

The results of a honey season depend almost solely upon the amount of rainfall during the previous winter and spring, the quantity varying from two to fifty inches annually.

The average rainfall each winter is about ten inches (usually no rain falls between April and November), and as it takes at least over fourteen

inches to insure a good honey crop, it is evident that it is not obtained every year. Other influences modify the general result of a honey season, such as altitude, distance from the coast, or nearness to mountain ranges. The desiccating east winds from the deserts also lessen the honey flow, should they blow too frequently during the spring and summer months.

In years of unusual drought, bees would become as extinct as the dodo, unless fed sufficiently to last until the following winter's rains have produced a new growth of honey plants.

We have fed about 3,000 pounds of honey to our bees since July last, but we are now out of the woods, as we have had over twenty inches of rain already this season and strong colonies are preparing to swarm.

A few neighboring beekeepers who did not feed have lost from one-half to two-thirds of all their colonies.

The table below shows the amount of our honey crop and number of bees, spring count, for each year since we have been keeping bees.

Year.	Colonies.	Pounds.
1880	65	13,300
1881	140	none
1882	140	3,500
1883	214	7,200
1884	235	33,000
1885	435	none

The above speaks for itself. In fact, there have been but three good honey years since 1876; those three were 1878, '80 and '84 respectively.

A great number of eastern beekeepers have been drawn here by the delusive reports of the great honey crops which are obtained here every three or four years. Our sweet song has a sad refrain, however, which many have learned to their sorrow.

Santa Paula, Cal.

For the American Apiculturist.

FOREIGN NOTES.

By Arthur Todd.

Parts five and six of Frank Cheshire's new book are at hand, and with me evoke new admiration of his painstaking, and careful investigation of the anatomy and physiology of the bee.

Mr. Cheshire, in writing about the sense of hearing in bees, says that he has for long regarded as conclusive the experiments carried on by Sir John Lubbock, since tuning forks, whistles and violins emit no sounds to which any instinct of these creatures could respond. To quote: "Should some alien being watch humanity during a thunderstorm he might quite similarly decide that thunder was to us inaudible. Clap might follow clap without securing any external sign of recognition; yet let a little child with tiny voice but shriek for help, and all would at once be awakened to activity. So with the bee; sounds appealing to its instincts meet with immediate response, while others evoke no wasted emotion."

In Mr. Cheshire's observations on the sense of smell in bees he remarks "The antennæ of male moths are exceedingly large, and extended in surface, and the evidence that these are marvellously sensitive to some emanation from the female is universally accepted."

Having shown that the ratio of sensory surface in bees is, queen one, worker two, drone three, Mr. Cheshire goes on to say that even he was greatly astonished at the result of his researches for he found by actual count that the drone bee has the astounding number of 37,800 distinct smell organs or in plain English that number of "noses."

Passing on to Mr. Cheshire's comparison of the visual powers

of worker, queen and drone we find him crediting the worker with 6,300 facets in each compound eye, or 12,600 in all. The queen having only necessity to go out visiting two or three times in her life was expected to have less facets, and examination proved it so; for she only showed 4,920 facets on each side of head, or 9,840 in all.

Mr. Lazy Bones, the drone, with no nectar to seek actually showed the immense number of 13,090 facets in each compound eye, or only 26,180 eyes in all. The answer to the question "Why should the visual apparatus of the drone be so extraordinarily developed beyond that of the worker, whose need of the eye seems at first to be so much more pressing than his ?" is left by Mr. Cheshire to a later period in his work.

Mr. Cheshire writes "Can we then leave these same organs without being moved by their wonder? Our conception is unequal to the task they give us, although our knowledge of them is, at the best, only superficial. I feel unable to close this chapter as I would. Swammerdam shall do it for me for he says "I cannot refrain from confessing, to the glory of the immense, incomprehensible architect that I have but imperfectly described, and represented this small organ; for to represent it to the life in its full perfection far exceeds the utmost efforts of human knowledge."

I am very pleased to see by the remarks of our friend S. Corneil, of Canada that my efforts to render Foreign Notes acceptable to the readers of the "Api" are appreciated.

I note with interest his references to the researches of Dr. Carpenter, Milne Edwards, and Prof Plateau and have already searched two libraries in this city without finding any of the works alluded to in Dr. Carpenter's letter.

Having occasion to-day to visit the superintendent of our Zoological Gardens I mentioned my difficulty to him, and he has told me where I am almost certain to find the work; but I regret to say I am so busy just now that a subject so large as "Insect Temperatures" demands more time than I can give to it, though I will endeavor to have a look into it if at all possible and give your readers the benefit.

Philadelphia, Pa.

CANADIAN DEPARTMENT.

By R. F. Holterman.

Since the last issue of the "Api," the Ontario government have granted the Ontario Beekeepers' Association $1,000 to assist in the prospective display of honey at the colonial and Indian Exhibition. The association have also been promised incorporation and an annual grant of $500. Apiarian supplies have already been shipped and a very fine display expected. Among the exhibitors are E. L. Goold & Co., Brantford, and D. A. Jones & Co., Beeton. The display of honey, if the season will at all permit, is expected to be not less than 100,000 and may exceed 200,000 lbs. The honey is expected to leave Canada the first week in August or earlier.

Reports from a number of leading apiarists tend to show that so far bees have wintered well; in fact, out of fully 1,000 colonies heard from, the percentage of loss is not so high as one.

True, the time for the heaviest loss is yet to come, but the present indications are we shall reach the honey season with but little loss. The past season opened with comparatively few surviving colonies, the season itself was rather unfavorable to a plen-

tiful storage of honey. In spite of this we have no hesitancy in saying honey has never sold at as low a figure as this winter. Extracted honey has been sold and can be had in large quantities at 8c. per lb.

If the coming season gives us a plentiful yield of honey there are but two courses open to us: quit the business or brace up, display the energy required to succeed in other business, and open out our home and foreign market. It will be a case of the survival of the most energetic, those most favorably located, in short those able to produce it at lowest price and making the greatest effort to open out the markets.

Brantford, Canada.

For the American Apiculturist.

SYRIO-ITALIAN CROSSES.

BY DR. G. L. TINKER.

IN crossing the races of bees, what proves to be the general result finds many exceptions in individual cases. The exceptions are probably due to prepotency in the male or female as the case may be, which variation from the rule is noted in all species of animals.

First crosses between any of the distinct races of bees produces vigorous stock and in none is there shown greater vigor than in those between Syrians and Italians. Proverbially, the Italio-German hybrid is good working stock but spirited and ugly to handle without the use of tobacco smoke. The same may be said of Syrian queens crossed with Italian drones, or the Syrio-Italians: but Italian queens crossed with Syrian drones, or the Italio Syrians, are not only excellent workers but usually gentle bees. Where only a first cross is desired, I recommend the latter if the quality of gentleness is an object. The Syrio-Italians are vindictive, but the Syrio-Germans, with bad handling, can kick up a bigger row in a neighborhood than any other bees I know of. Their sting is very deep and painful, usually causing an ecchymosis of blood. Dangerous as they are they can be handled nicely by the use tobacco smoke. (For this purpose, I use in the smoker Scotch snuff rolled up in cotton cloth.

The Italio-Syrians are fine comb builders and the queens more prolific than pure Italians. The capping of the combs is about like that of the latter. The Syrio-Italians cap their combs like the pure Syrians, showing that the comb building and comb capping faculty is transmitted by the queen, although there will be found variations from the rule. My Syrio-Albinos are bred up from one of these latter queens whose worker bees capped their honey even more beautifully than do the black bees. The white markings are of imported Italian origin, so that this strain of bees is really Syrio-Italian. By careful breeding the white markings were perpetuated and the bees so marked were found to be very gentle, but almost invariably the occasional queens with yellow markings would produce the vindictive bees characteristic of the Syrio-Italians.

Our numerous experiments in breeding up a new strain of bees by *selective* breeding has developed the fact that the honey bee can be greatly improved and now that we have the promise of the sure control of the fecundating process through the late discoveries of Prof. N. W. McLain of the U. S. Apicultural Station, we have before us the delightful assurance that intelligent queen breeders can improve their bees *ad infinitum*.

The highly prolific qualities of

the Syrian queens it is now certain can be transmitted in a new strain having every desirable quality, and from these bees I confidently predict will be reared the great honey-producing bee of the future.

New Phila., Apr. 15, 1886.

For the American Apiculturist.

SOMETHING ABOUT SECTIONS.

BY SAMUEL CUSHMAN.

My first experience was with nailed sections having thin sides, and thick top and bottom, but I was satisfied with them until I saw a few cases of honey in nice white poplar sections with dovetailed corners. They took the shine off mine so thoroughly, that I would have no others, but I soon found that they were far from satisfactory, and troublesome to put together and stay in place, as they were not dovetailed accurately, and would not go together as they ought.

After one corner was put together, there were three more to do and by the time they were joined the first corner needed attention, and often the work would have to be done twice, and when put together they would get out of square. So while I had a thin section beautifully white, still it was unsatisfactory and I thought of going back to the nailed section, but their thick wood and inferior appearance caused me to look for something better. I soon heard of and tried the all-one-piece section, and was able to fold them without breaking and with little trouble. They were quite stiff, thin and smooth, but not so white as the poplar, liable to stain if wet, or with age, and it was almost impossible to fold them so they would be quite square, and if to be glassed this was another objection.

The white poplar made the best appearance, and I must have my honey in the most attractive package, and as I found some that were almost perfectly made, I had less trouble than formerly.

I then heard of gluing dovetailed sections; but to have glue associated with nice comb honey seemed out of the question. However, I sent for a sample glued section, and they were so true, square and stiff, that I was ready to tolerate glue. They showed a slight dark glue stain at corners, but for that I had what I had been looking for.

By using white glue, and but little of it, I now am able to put them up so the glue will not show and shall glue all sections this season. There is a machine made for gluing and putting together sections which I have not seen, but shall try if I require many thousand. I have a way to do it, but do not know that any one has tested it, by which I am able to put together and glue sections as easily as I can without glue, and would as soon do it as to fold one piece sections. I hope some of the readers of the "Api" will receive as much benefit as I have received from this method.

I use in place of a mallet a strip of wood one-half inch thick, a foot long and two or three inches wide, (one end is whittled for a handle), white glue, hot and quite thick, a suitable brush and an ordinary carpenter's square.

With the glue on one side and a pile of tops and sides near by, I take up a piece, lift the brush out of the glue, touch one of the dovetailed ends on inside to it, stand another piece on the bench and rest the glued end on it, then with the flat of the strip, press the end to make it flush with the upright piece,

then one sharp, square blow with the edge of strip will bring them together, where they will stay and the work will not have to be twice done.

The other corners are done the same; of course, the last piece will need glue on both ends.

The glue lubricates the joint, so that it goes in easily, and also keeps it in place. If the glue is hot, very little will stick, and if thick, the section will be stiff almost before out of your hands. As soon as it is in shape it is crowded into the angle of the square which is leaning against a box, on the bench within easy reach. This squares the section, and it is so stiff that tossing it on the pile near by will not rack it, and in a few minutes it is as strong as could be desired. Should you carelessly drop an armful down stairs, you can gather them up in good condition, and it is said that they may be put together six months before use, and be strong and stiff when needed. It seems that we now have all that could be desired in construction and material, but in these progressive days we may soon see something better; and right here, I must say a word in regard to the new side "slot section."

Why are beekeepers so slow to accept an improvement that is "practically self-evident?" Is it because they are quietly testing it, or have they not received the idea clearly? I can see but one objection: trouble and expense of changing fixtures. They can be used with or without separators. I shall use them this season, and feel so confident that they are desirable, that my *new fixtures* are all adapted to them.

One of the principal reasons why Mr. L. L. Langstroth had his bee-space above the frames was that the bees were able to go from section to section, without going into the brood-nest, and that they were generally shut off in small separate clusters.

This would doubly apply to the new section, which allows the bees to pass from box to box, side or top, giving them a chance to cluster as on full combs, and allowing heat to pass freely to all of the sections. If there are any real objections, I would like to know them.

Pawtucket, R. I.

EDITORIAL NOTES.

SPRING MANAGEMENT.

THE principal object in spring management is to rear all the brood the bees can care for. The old maxim "Keep your stock strong" is as much a truism as ever, although to a certain extent misunderstood. We want bees as producers and not consumers; and our plan of work will decide what means shall be adopted to obtain them. If a crop of honey only is desired, and no increase of bees, it is only required to rear so much brood as will either become foragers, or allow foragers to issue from the hive at those times when honey is secreted rapidly. All brood reared more than this will cause loss. If, however, we want a maximum of increase, either of colonies or bees by the pound, then the queen should be forced to her full capacity during the whole season. It is of course important to have all colonies well filled with young bees at the close of the season, but in our experience those monster colonies we sometimes read about will winter no better or give better results the following season than those of moderate size. In wintering on summer stands we have found that bees enough to cover well five L-frames in October will prove fully as profitable as a larger number.

—The question is often asked us, Why is it that many immature bees are found in front of the hive at times during the honey season?

This conundrum is an easy one, and is the result of one of three causes, as a rule. If this state of things is found in early spring on the morning following a severely cold night, it is caused by successive stimulation of a prolific queen in a weak colony, or one in which the comb is disproportioned to the number of bees. The severe cold causes the bees to cluster to save their own lives, and the brood is left to perish. If found in warm weather it may be caused by the larvæ of the bee moth, or as is more apt to be the case, by lack of stores in the hive. The latter will prove the case as a rule, if no honey is being gathered when the dead brood is found. A careful examination will always determine which of the above is the cause, and the remedy is so obvious that we need not occupy valuable space to give it. The amateur only is puzzled by such a state of affairs. All bee-keepers have learned the cause and cure by sad (sometimes) experience.

—Mr. Thomas B. Blow, F.L.S., an English gentleman, has been on a visit "among the queen-raisers in the north of Italy." A full description of what he saw and heard is given in the "British Bee Journal" of March 4, 1886. The most prominent queen-raiser was Jean Pometta, of Gudo, Bellinzona. The article is illustrated with cuts showing the different way of preparing the combs for cell building. It is safe to say that Pometta has been reading a copy of the "BEEKEEPERS' HANDY BOOK," as seven of the nine illustrations shown were most certainly from those in the "Handy Book." We are glad to note here that our friends, who have claimed to be so far ahead of the rest of the world in bee culture, have been taught something unknown to to them before the "Handy Book" was published. The only fault we have to find is the fact that Pometta deceived his visitor regarding his method of queen-rearing.

A building and some part of Pometta's apiary are also shown. If the latter is arranged in such an inconvenient way as the illustration shows, Mr. Pometta should visit America and learn something beside the best methods of queen-rearing from our beekeepers. It may be a convenient way in Italy to place hives a dozen or more feet above the ground, and in such a way that only the front of the hives can be seen, but no American beekeeper will adopt such a practice.

—We do not know that there is any need of so doing, but we do feel it our duty to warn beginners not to run too much after new things. Those methods and appliances that have stood the test of years, and the hives that for years have proved a success in the hands of the best and most expert of our apiarists should not be thrown aside for those whose only claim to being of value is as yet their being new. Let those who have time to devote to the matter give their attention to testing new devices; the great majority will be better off by letting them severely alone. The great bane of apiculture has been unproved theories. It requires several seasons' experience to fully test any new thing, and the beginner can hardly afford either the time, or expense necessary for this purpose. It is safe to follow in the footsteps of those who have proved successful in the past, and a new thing *may* be more valuable than any that is old, then again it *may* not. A good rule to follow is the old one of Horace Greeley to the friend who asked his advice in regard to dabbling in stocks, viz.: "Go slow young man, go slow."

—Success in bee culture is only attainable by continuous and unabated effort to succeed. The man who succeeds by catching a shower of wealth, which descends on not one in a thousand, is not a success any more than is the man who draws a prize "in a lottery scheme."

—Several of our correspondents are sending us articles and at the same time duplicate copies to some of the other bee papers. This is not a good idea. A large number of those who read the bee journals take all of them. As the "Api" is a monthly, an article might appear in one of the weeklies at the first of the month, but would not reach us in season for the "Api" till the following month; at that time it would seem rather stale. Do not duplicate your articles, and then the readers of the bee papers will get much more for their money. Unless this practice is discontinued subscriptions will grow beautifully less. No bee journal has any subscribers to spare.

—Four-piece sections, like the old box hive, have had their day, and soon will be superseded by the all-one-piece. This fact is more apparent each succeeding season.

—Bees commenced here to carry in pollen March 31. Have known them to do so as early in the season but once, that was in the year 1863. They then carried in pollen on March 16, and continued for three days in succession. Sometimes, an "early" spring means an unfavorable season for bees, and a good honey crop. A cold backward spring is usually followed by a fruitful season.

—A dealer in honey remarked to us that the market for honey was very dull. This was not owing to an over-stock, but people he said had no money these unusually dull times to put out for luxuries of any sort. The labor troubles, now existing in all parts of the country, have upset business generally.

If you will read our advertisement on another page it will be seen that *ten hundred and sixty* solid pages of the most valuable bee literature may be purchased for the above named sum. Every page of reading matter of the Apiculturist is stereotyped and we can furnish any of the back numbers at any time: hence the reasons why we can do so for so small a sum. The offer includes the "Apiculturist from 1883 to January 1, 1887. This is an unparalleled offer and every beekeeper in the land should take advantage of it. Volumes one, two and three of the above are handsomely bound in cloth.

—The "Apiculturist" will be mailed on the first day of each month.

TOPICS OF GENERAL INTEREST.

PROLIFIC QUEENS.

Is it possible for a queen to be too prolific? A distinguished beekeeper says he does not want a queen that has such a fault. Since it is an easy matter to control the increase of a colony by the use of perforated zinc, division-boards, or by dummies, no queen should be rejected for such a fault. A queen that will deposit 3000 eggs each twenty-four hours, is worth twenty or in fact 100 that will lay only about that number of eggs in the same time. An unprolific queen is about as profitable a piece of property as an old hen that will lay a few eggs and then "set" for the next two months.

A good queen of any race or strain should not be superseded. Keep her in the apiary as long as her colony is prosperous, and is giving good returns in honey and natural increase of colonies.

HOW MANY FRAMES TO A HIVE.

A FEW years ago we sold two colonies of bees in L. hives to a friend. It was in the fall and the bees had

been prepared for winter by reducing the number of frames from nine to seven, and contracting the brood-chamber by using dummies, which have not been removed. The two colonies have been wintered successfully on the summer stand for five successive winters. Two more prosperous hives of bees cannot be found. Does not this demonstrate that seven combs are a sufficient number for all practical purposes? Perhaps I should state that the seven frames occupy the space that eight frames should. Notwithstanding the above facts, it is the general opinion that the standard L. hives should have not less than eight frames.

OPENING HIVES OFTEN.

We believe that some beekeepers meddle with their bees too much. An enthusiast will often open a hive for examination and to see how the colony is getting along, or to admire a beautiful queen he has just purchased and introduced, thereby imperilling the life of the new queen. A young queen in a strange colony is very timid, and when the hive is disturbed will run over the combs rapidly; the bees then notice that she is a stranger in the "wrong pew" and at once "ball" her. In most such cases the queen is destroyed or ruined, and in the course of a few days is ejected from the hive.

The beginner and novice should take the hint, and avoid opening a hive for at least ten days after introducing a queen, and then he will have no cause for accusing the dealer of selling him an old or an inferior queen. In nearly every case when young queens are superseded it is owing to the cause stated above.

HOW TO OPEN A HIVE.

When you have occasion to handle bees in the early spring, separate the frames with a slow, easy motion laterally, then lift them out of the hives without shifting the bees. If they are handled roughly in the early spring, they will become cross, and demoralized, and will sometimes "ball" and kill their queen. Never handle bees when it is so cool that the bees chill when they fall from the combs.

SUGGESTIONS.

No matter how snugly the bees have been prepared for the winter months, it pays to make them a little more comfortable when spring begins to call them to the labors of the season. Sometimes a dry, warm blanket in the place of a damp one; the removing of the cover to let the sun shine in at the top of the hives for a few hours encourages the bees wonderfully. No domestic creatures give better returns for the labor bestowed on them.

"CLETHRA ALNIFOLIA."

This plant was described in the "Api" for April by Jacob Manning of Reading, Mass. The bush (as it is a bush growing from three to six feet high) will grow upon most any soil, but seems to thrive the best when the land is not too dry or too wet, say right at the edge of the meadow or swamp. It blooms late in July and continues to do so till near October. It yields honey abundantly, very heavy and of fine flavor. We advise all who have a suitable place for planting them to procure some cuttings and set them this year. We can supply them to all who desire to purchase.

DRY FÆCES.

The specimens of bee fæces, which Mr. S. Corneil has so kindly sent out to a number of prominent beekeepers for examination, have been received. In my opinion, the specimens show that the bees may accumulate considerable fæces in the intestines in winter confinement, and still remain in a healthy state. That they void in confinement to any great extent is not well established. That they do under certain circumstances is certain, but they are not such as would prove a pre-

ventive of bee diarrhœa, if accumulations alone were the cause of that disorder. The specimens show that in healthy accumulations, the injesta of pollen or bee bread is the principal source; but as bee diarrhœa is something more than a simple accumulation of the refuse products of digestion, the relation of pollen to "the cause" is about as visionary as the man in the moon.

WATER FOR BEES.

The apiarist should not fail to place water in suitable vessels near the apiary during a season of drought. Bees must have water, and it is better to furnish them with it nice and clean than to have them sipping it from some slough hole or cesspool.

RED CLOVER QUEENS.

Some one claims to have a strain of Italian bees that will gather honey from red clover. It is no doubt true, as bees of every strain and race will work upon the second or seed-crop of red clover. None of them will do a heavy business at it, as red clover (second crop) is in bloom at a season when the weather is not favorable to the secretion of honey.

AMERICAN APICULTURIST BEE FARM NOTES.

SEVERAL METHODS FOR INTRODUCING FERTILE AND UNFERTILE QUEENS.

By Henry Alley.

There are many methods for introducing queens and about every dealer has a favorite way of his own. In the "Apiculturist" for April we hinted at a method for introducing unfertile queens and promised to say more about it in some future number. As the season for doing such work is close at hand, we give below methods that have been practised with success for twenty-seven years.

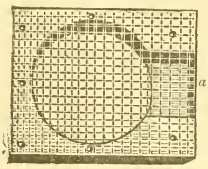
METHODS FOR INTRODUCING FERTILE QUEENS.

For many years we introduced laying or fertile queens immediately after unqueening a hive. On one occasion I removed the queens from eight full colonies and introduced a new queen to each one successfully in less than two hours. Tobacco smoke was used for subduing the bees while the queens were being removed, and as soon as the bees were quiet more smoke was given them and the new queens let in the hives at once. More or less smoke was blown in among the bees during a period of fifteen minutes, but not enough was given any colony to make the bees fall from the combs. This operation should not be performed in the middle of the day unless bees are gathering honey, otherwise robbing would be induced. The secret of this "immediate" introduction of queens is in deceiving the bees, by fumigating them and making all "smell" alike, and nothing is so effective as tobacco smoke. The effects of the tobacco will pass in a few hours and the bees will be at work as though nothing had happened.

ANOTHER METHOD FOR INTRODUCING FERTILE QUEENS.

Some ten years ago I was called to go fifty miles from home to introduce Italian queens for a lady. I did so by the following method: I prepared some small cages by making an inch-and-a-quarter hole through a block of wood two and one-half inches long, one and seven-eighths inches wide and one-half inch thick. Both sides of the block were covered with wire cloth. The aperture was about three-fourths inch from one end. A piece was cut from the long end, three-fourths inch wide, but not quite through the wood (see *a* in illustration). After the queen was placed in the cage this aperture was filled with

food the same as used in shipping cages for mailing queens. The queens were then removed from the six colonies; when the bees were back in the hive and had quieted down, these cages were placed on



Introducing Cage.

one frames, under the cushion in such a way that the bees would have access to the food, then a small amount of tobacco smoke was blown into the hive, thus scenting bees and queens all alike. In the course of two hours the queen was released and as the colony had not had time to miss their own queen, the new one was successfully introduced. This method is entirely new and is now in print for the first time. I think it will be found the safest, quickest and easiest way to introduce queens yet given to the public.

SEVERAL METHODS FOR INTRODUCING UNFERTILE QUEENS.

Unfertile queens cannot be introduced immediately after removing a fertile queen from a colony, unless perhaps, it is a queen just emerged from a cell, and even in that case the chances are that she would be destroyed when twenty-four hours old. I notice by the bee journals that some of our most prominent queen breeders cannot at all times make a success of introducing virgin queens. If the plan given below is followed, success will surely be the result.

In the first place the colony, whether it be a large or small one, must be queenless seventy-two hours before the virgin queen is introduced. I have introduced some queens in thirty-six hours after removing a laying queen, but it is much better to use the seventy-two hour method. I do not lose on an average one queen in 100 by the following method, though nearly all the unfertile queens I introduce are from four to eight days old. Leave the colony queenless three days, then just before night fumigate the bees pretty thoroughly with tobacco smoke, by using the pipe described on page 91, and let the queen run in at the top of the hive if possible; then throw grass against the entrance of the hive to keep the bees in, as the smoke will slightly intoxicate them and some would roll out on the ground. The bees will fully recover from the effects of the smoke before the next morning, and not even an expert could select the colony to which the queen was introduced the night previous.

ANOTHER WAY TO INTRODUCE UNFERTILE QUEENS.

This plan is similar to the second one given for introducing fertile queens. Last season we introduced a large number of queens by placing them in cages above described, and then inserting the cage in one corner of one of the brood-frames, and smoking the bees slightly. (The colonies had been queenless three days). When the food is removed from the cage the queen leisurely walks out and is successfully introduced; if the weather is pleasant she is fertilized the next day.

It will be noticed that this method is successful for the reason that the hive is very quiet when the queen is released. Excitement at the time of introducing a queen is about sure death to her.

If the person receiving a queen

by mail will immediately unqueen the hive to which the new queen is to be introduced, and smoke the bees as above described, we will guarantee to replace every queen lost. The cages used to slip queens in from the "Api" Bee Farm will be arranged so that the above methods may be adopted for introducing them. All that will be needed is to remove the covering to the food, place the cage in the hive, fumigate the bees and the work is done.

QUESTIONS AND ANSWERS.

QUESTIONS BY "OLD BEEKEEPER."

1. How large a piece of foundation do you use for starters in sections? Will not a piece that will about half-fill the section, cut V-shape do as well as a piece that will quite fill it? How do you fasten the foundation in the sections?

2. If you use a reversible section case, how long do you let the bees work in first lot before they are reversed?

3. What are the advantages gained by reversing the sections?

4. If you "tier up" how long do you allow the bees to work in the sections before giving them a new set?

5. Are not two sets of 28 1-pound sections to a set, about the extent to which the "tiering up" practice should be carried?

6. About what time should the section be placed on the hive and how many at one time?

ANSWERS BY G. M. DOOLITTLE.

1. If the foundation is thin, say ten to twelve feet to the pound, I prefer to fill the sections.

I use melted wax.

2. I do not reverse my sections. If I did, should want them two-thirds full before reversing.

3. Getting the combs more securely fastened to the sections. I hardly think there is enough gained to pay for the extra trouble.

4. I do not "tier up." If I did I should do so when the first set was two-thirds full.

5. Yes, except in powerful colonies.

6. As soon as I find that honey is coming in, I place sections on the hives to the capacity of from fifteen to twenty pounds. In a week give ten to fifteen pounds more room and so on till the full capacity of the hive is reached. When bits of new comb are being built at, or near the top of the hive, then is the time to put on the sections.

ANSWERS BY E. E. HASTY.

1. In sections I prefer a piece of foundation about two inches long and less than half an inch wide. I fasten foundation with the Parker machine. I do not use the large V-shaped starter, but would prefer it to the full-sized square.

2 and 3. I am so utterly incredulous about the profitableness of reversing sections, that I have never even tried the method.

4. I have two distinct styles of surplus arrangement, but neither of them tier up. The tiering method is for those whose honey mostly comes in one brief deluge, not for localities like mine where the honey flow is spread thinly over the whole summer.

5. I judge that two 28-lb. cases would usually be enough.

6. Put the sections on just before the honey is expected, if the bees are strong enough. June 10 is somewhere near the time in this locality. I usually put on four or five 8-section broad frames at first, and give more as they need them.

"ANSWERS BY OLD BEEKEEPER."

1. A small piece will do as well as a large one, but there is one advantage in using a large piece. As a rule, if the sections are filled with foundation, little or no-drone comb will be built in them. Fasten it in with a mixture of beeswax and rosin, using it quite warm. It can be put in the sections as rapidly as one can pick them up. If properly done it will not come off unless special pains are taken to remove it.

2. The sections should be reversed when all are nearly capped. The sections in the centre will be capped sometime before those on the outside. I think it best to reverse when the capping is being done to the outside sections.

3. The advantages in reversing are that the bees will fill the sections nearly solid. They look much nicer,

and the honey is less likely to be damaged while being handled and transported.

4. "Tier up" when the bees seem to demand more room. If the sections on the hive seem to be full of bees and honey, add another set by raising the first one and placing the new ones under.

5. Ordinarily, fifty-six sections are as many as one colony can work in to advantage. When more are needed, it would be the best plan to remove those filled with honey, and replace with new ones. Then, again, the finished sections should be removed as soon as filled, to preserve the whiteness and beauty of the honey.

6. One of the best indications that a colony is ready to work in sections, is when the bees begin to cluster out at the entrance. I do not mean by this that the bees must be outside by the peck, but when a few are seen there. When there is plenty of room in the hive, the bees will not cluster any on the outside. Sometimes, at the beginning of the honey harvest small knots may be seen just above the entrance or on the alighting board: then is the time to put the sections on. Put on enough at that time to cover the top of the frames, or one set of sections. Cover up warm, and at night contract the entrance, as if the weather is cool, the bees will desert the sections at night, and the best time for building comb is lost. Bees make comb more rapidly during the night than during the day.

ANSWERS BY D. D. MARSH.

1. One that will fill about two-thirds of the section. I prefer a V-shape piece, so the bees can cluster naturally all around it. Would not have it too sharp-pointed, but about an inch across the point, so it would not curl out sidewise. Put them in with Parker's machine.

2. Have never yet used a "reversible" section case; but have no doubt that is the "coming case."

3. Filling the section even full of comb, looking better, weighing more, and bearing handling better.

4. Until they have so far filled the first set with comb and honey that the bees begin to be crowded for room; then put on a second case under it, and the bees will have fresh room, and the first case will have ample time to ripen and be capped.

5. It depends altogether on the pasturage and the strength of the colony. I think two tiers of cases ordinarily exhaust the advantages of tiering up, because the top case would be finished and ready to come off by the time the bottom case was nearly full. Ordinarily two such cases are all any colony will fill in this locality.

6. When the first indication of new white combs appears on the tops of the frames. If the colony is very strong put them on a little earlier if you do not wish the bees to get ahead of you and cast a swarm before they go to work in the sections. I prefer small cases, so I can put on about fourteen sections at first, and then after they get to work, put on the other fourteen. You can taper down better at the close of the harvest, and get all the sections finished up.

ANSWERS BY J. H. MARTIN.

1 I use a square piece, filling the section to within a quarter of an inch of the sides and bottom. This gives me better results than a V-shape. I fasten with rosin and beeswax.

2. Have never used the reversible section case.

3. I think it would be an advantage to reverse, to get the corners of all sections uniformly filled.

4. I allow the bees to nearly fill up the sections before tiering up.

5. It is about as far as it can be carried to advantage if the colony is allowed to swarm, but if the whole force can be kept at home, another set can be added to advantage, and if the honey yield continues, another set.

6. I find there is little gained in putting sections on until the brood chamber is crowded with bees, about June 1, in my locality, or if the season is early, latter part of May. At that time, a full set can be put on, and soon be occupied by bees.

ANSWERS BY A. E. MANUM.

1. I use full sheets of foundation, prefering it to small pieces of any shape. I have experimented with small pieces of various shapes, but have now settled on pieces full size of the section, and consider it of great advantage to the bees. By the use of full sheets of foundation, drone comb is avoided in the sections, thus giving the honey a much better appearance than when part drone and worker comb is made. I fasten it in with melted wax by using a machine of my own invention.

2. I do not use a reversible section case, but sometimes reverse such sections as are not capped at the bottom, when nearly all the others are in the same case. Reversing is sometimes advisable, and the first tier of sections put on would be finished sooner if reversed. When finished, they should be removed from the hive before the bees soil the beautiful white combs.

3. The advantages of reversing sections are in getting the whole surface capped which the bees are loath to do at the close of the season.

4. I begin to "tier up" if the colony is strong and honey coming in fast, as soon as the foundation in the first set of sections is drawn out and nearly full length. "Tier up" by raising the first set of sections and placing another under them. For four or five days after, I have sometimes found it necessary to place the third set of sections on the hive to accommodate the bees.

5. Yes and no. That depends on the method of management and season. In a poor season one set of sections will do; in a good season from three to six cases of sections will be needed. I have used six tiers of thirty-two sections each (one pound sections) and had them filled, but more often I use but three such cases at one time, because if properly managed, the first, or top set of sections will be completed by the time the fourth should be put on.

6. When the hive is full of bees and brood, and honey coming in faster than the bees consume it. This can be detected by the appearance of new comb between the frames at the top bar where the cells have been lengthened out. This indicates that the bees need more room. I place one whole set of thirty-two one-pound sections on at one time, but wait, of course, till each colony needs the room. Some seasons the bees need the sections much earlier than at others. We must be governed by conditions.

ANSWERS BY G. W. DEMAREE.

1. If the season is a poor one for surplus honey, I use full sheets of foundation on the sections; but in a good season I see but little difference between the full sheets and the V-shaped starters and hence use the latter as a matter of economy.

To fasten the foundation in the sections I use a little implement which is an improvement on the Parker foundation fastener.

2. I can do no better than to rely on my best judgment as to the proper stage of advancement toward completion of the sections to do the most good by inverting the case. By looking down between the sections I can tell when the tops are well finished. I then invert the case to have the bottoms of the sections "plumped out."

3. It is a well known fact that bees are inclined to finish the tops of their combs more perfectly than they do the bottoms, and if the inverting is done at the proper time the sections will be finished alike at top and bottom. It seems to me that this is a decided advantage.

4. I could not produce honey to any advantage in my locality without the "tiering up" system. I keep a watch over the section cases, and when the combs are drawn out and mostly filled with new honey they are lifted and empty cases put under them.

5. My invertible section case holds thirty-two $4\frac{1}{4}$ x $4\frac{1}{4}$ x $1\frac{3}{4}$ sections. I use from two to three cases to each hive. If we have the time to watch over them a little more closely, two cases to each hive will give good results; but the tendency to swarm is encouraged by using the minimum number of cases.

6. I put on the section cases as soon as the tops of the combs begin to turn white by reason of the bees adding new wax to the cells. Nothing is gained by adjusting the cases sooner than this, because bees refuse to build comb or draw out foundation when no honey is being gathered.

Christiansburg, Ky.

A BUNDLE OF INQUIRIES AND ANSWERS.

BY L. THULEMEYER.

If I put one-half sheet of foundation in wired frames will the bees work out the other half?

Columbus, Texas.

Ans. Yes, but they would most likely finish out with drone comb. We have found this the case many times. Last year we purchased twenty colonies of bees; all the combs were built on foundation, but in some of the frames the foundation did not more than one-half fill the frame when it was put in and all such were finished down with drone comb.

BY S. V. VEEDER.

What is the best material to fasten comb foundation in sections so that it will hold the best?

Please have this answered in "Questions and Answers" of "American Apiculturist" by your correspondents.

Pattersonville, N. Y.

Ans. See "Apiculturist" for April, page 89.

BY CARPENTER AND NELSON.

We reserved some three pounds of honey from our last year's crop which has been in the warehouse since last summer with only a piece of cloth over the bung. We find on examination that it has candied but still continues to ferment and run out of the barrel. Can you assign any cause for it and suggest any remedy?

Eldorado, Florida.

ANSWER BY L. C. ROOT.

If honey is extracted when first stored in the comb before being at least partially cured, and placed in a wooden cask or vat which has not been first coated with wax it will often ferment. Another cause of fermentation is when honey is placed in casks that have been used for the same purpose previously and have not been thoroughly cleansed and recoated with wax. If held in tin cans until well cured, I have never been troubled with fermentation.

BY A BEGINNER.

1. What is the best way to take off surplus honey?

2. Can swarming be prevented and how?

3. Would you advise the use of Alley's queen-trap on all hives or would it be as well on each alternate hive or not at all?

4. Is the reversible hive going to revolutionize beekeeping?

By answering the above you will oblige.

ANSWERS BY "OLD BEEKEEPER."

1. If the honey is stored in sections and a section-rack used, we would advise one to blow a little smoke in at the entrance and then over the top of the sections to drive the bees out of them as much as possible; then raise the section-case and direct the smoke under and immediately remove the honey to some dark room or cellar, leaving a small place for the light to enter and for the bees to pass out, which they will readily do.

2. Yes, swarming can be prevented but it is a vast deal of trouble to do it. It requires more room to reply to this question than we can devote to it here. Read the back numbers of the "Api," also the latest bee books. Swarming can be much better controlled than prevented.

3. Of course we advise the use of Alley's drone and queen trap, what other is worth the mention? Why we so advise:

First. If it is swarming time and one desires to save all swarms with the least trouble, we advise the use of the trap. Second. If desirable to destroy the useless drones in the apiary use the trap, and, third, if pure queens of any race are to be reared in an apiary where there are several races or where there are impure bees, the trap should be used on all hives but the one whose drones you wish to mate to the queens.

4. No, sir; no hive will revolutionize beekeeping. The Langstroth hive did that thing twenty-five years ago and it never will be repeated by any man. We have as near perfection in the L. hive as it is possible to attain. Old father Langstroth will never be bereft of the credit of inventing the hive that revolutionized beekeeping by any one to come hereafter. It is an easy matter to arrange the Langstroth hive so the combs can be reversed and we have done that but it is the Langstroth hive all the same. The one to revolutionize beekeeping will be the person who can control the weather and make it favorable at all times for all beekeepers. We are willing to pay a fair sum for even a *patent* right to any man who can tell us how to do it.

QUESTIONS BY A SUBSCRIBER.

1. How often do you open a hive during the building-up period, in spring and during the honey flow?

2. How many brood frames do you leave in a ten-frame "Simplicity" after putting one honey box on, or do you take any out?

3. In contracting brood chambers to drive bees into sections, what provision do you use to prevent the bees building comb in the empty space?

4. In a district where forage is presumably scarce, where beekeeping farmers of many years' experience say there is no honey stored after the apple blossom (though we get twenty-five pounds after that date) how many boxes (one-pound) would you give a

colony, the top story of whose hive is as deep as the bottom?

5. After sections have been given, can one brood-chamber be worked to advantage in the way of increase of bees?

ANSWERS BY J. E. POND, JR.

1. It will depend entirely upon circumstances; no rule can be given. In early spring I examine each colony and put things into shape. Ordinarily, two more examinations will be ample for a weak colony, but one is, as a rule, needed for a strong stock. During the honey flow I examine often enough to assure myself that no queens can be reared "on the sly."

2. For years I used but nine and spaced them wide apart. Last season I found that all the advantages claimed for reversing frames could be gained by using ten frames spaced a little less than three-eighths of an inch apart, the comb being shaved down to exactly seven-eighths of an inch in width and a dummy being inserted in the outside of the hive to take the space left by the small distance used between frames. The queen, I found, would deposit eggs close up to top bars and the honey would all go up stairs. The principle is that the queens will not lay in store combs but will in regular brood and *do*.

3. I fill in the space completely with division-boards and thus no place is left to build in.

4. In such a locality I should run for extracted honey entirely. No one can tell how many boxes would be filled. If I were bound to run for comb honey I should put on a full set and see what would be done. This answer must necessarily be "all guess work."

5. I do not understand this question; it is impossible to work for both increase of bees and a large crop of honey at the same time and in the same hive. The better plan is to devote a part to honey-gathering and a part to brood-rearing. In this way only can the best results be produced.

ARE BEES TAXABLE?

EDITOR AM. APICULTURIST: What are the laws, if any, regarding the taxation of bees in this state?

It is claimed in this town that my bees can be taxed the same as any live stock.

C. H. SMITH.

ANSWER BY J. E. POND, JR.

I do not see any reason why bees should not be taxed at their fair value. The only question that can arise will be as to what that value is.

Bees are property; that is when in hives, although when wild they are considered *ferœ naturæ*.

It is not customary to tax bees, but that is owing to custom, and not to law. There are no special statutes in regard to taxing bees, but the question will fall under the general taxation laws.

As for myself, I don't wish to avoid payment of taxes on any property whatever, as by taxes only can our government be supported; therefore, I can give no consolation to any one who does desire to evade taxation even on bees.

Foxboro, Mass.

HEIGHT TO SET HIVES; SHADE FOR THEM.

I am much pleased with the "Apiculturist," and don't see how a bee-keeper could do without it and be successful. I am a beginner and running fifty-four colonies for extracted honey. Would you be so kind as to tell me in the "Api" how high the hives should be set above the ground and whether they should be shaded or not. I have the Langstroth hive.

ANSWER BY OLD BEEKEEPER.

1. One foot from the ground will do.

2. If the hives have an entrance one-half an inch high and the full length of the width of the hive, they will need no shade unless they stand in some place unprotected from the wind. We never shade our hives at all and the bees "lay out" very little.

WHO CAN ANSWER?

I have nine colonies packed on the summer stands. I found something which I would like to have some light upon. I was examining two of my colonies and saw some little mites crawling on the frames. There were a few of them in the hives last summer. Will some one tell me how to get rid of these pests before they destroy my bees? Bees are dying off considerably. Suppose this is natural for winter. The honey flow stopped about the 8th of September. Honey crop was good last season.

MRS. ISAAC FOSTER.

Barry, Ill.

LETTER BOX.

LETTERS FROM OUR READERS WHO APPRECIATE A GOOD BEE JOURNAL.

Worcester, Pa.

I must say I have received *more practical* information from the "Api" than from any thing I have read. Got several bee journals and have three manuals. If the cloth bound (two first vols.) volume had an index like the one in volume three, I would recommend it to beginners in preference to any manual.

Very truly,
GEO. SPITLER.

Gonzales, Cal.

The tone of the American Apiculturist is dignified, its management able, its articles and editorials are alike pithy and sound; and take it, number after number, there is a large per cent of its articles the general reader would preserve. A NORTON.

Amprior, Ont.

P. H. MORANT & CO.

We find your journal to give a great deal of valuable information on bee culture. We would not do without it. JAMES EDWARDS & SON.

Oak Bower, Ga.

I have been reading the sample copy of the Am. "Api." you kindly sent me and like it splendidly. I enclose 50 cts. for six months. THOS. PHILLIPS.

Atlanthus, Mo.

I have been a subscriber to the Am. Apiculturist since it was issued and to say that I esteem and appreciate the same is not telling half. I have been taking all the bee journals published in the English language and like the "Api." best of all, and for the following reason. I have found and cut from its columns and pasted in my reference book more than double the number of articles for future reference than any other journal has afforded me.

JNO. P. NEEDLES.

BEES ON SHALLOW COMBS IN WINTER.

Bees are wintering finely in cellar and out with me. It would please and astonish you to see them cluster below five inch combs in spaces designed for them so to cluster. They seem to prefer to hang in a large clump below their honey to being separated by cold combs. Respectfully,

T. F. BINGHAM.

HOW TO HIVE A SWARM OF BEES.

East Middleboro, Vt.

Having read in the back numbers of the "American Apiculturist" of the different ways of hiving swarms, I thought I would give my mode. I have a few hives in readiness, placed where I want to have them stand. When the swarm comes out and clusters, I take a common ten quart pan and a thin board or shingle about seven inches wide and sixteen inches long, lay it over one edge of the pan and clinch one side of the pan with the thumb on the board to keep it in place. Hold it up under the cluster; if on a limb give it a gentle shake; they will cluster under the board in the pan; then shake again and again till the bees that are flying all centre for the pan; then fan them; move a little and keep still a few minutes and they will all settle on the pan; then you can carry them where you have a mind, and pour them down in front of the hive when they will run up into it without difficulty; but keep them going in by stirring them up often, with a stick. If the swarm is large, go twice or more, but keep them going into the hive. If they light in a difficult place to get at, such as on the body of a tree or down among weeds on the ground, take a long handle milk dipper and gather them up easily, and put them in the pan, a dipper full at a time, and smoke them a little and they will all come. R. A. DUNHAM.

Riverside, N. J.

GENTS:

Enclosed please find 50 cts. in stamps for which please send me the American Apiculturist for six months.

I find I can not do without the Apiculturist under any circumstances, much less without my bees.

Very respectfully,
J. H. WEIDMAN.

Battle Ground, Ind.

I had a splendid honey season last year. The yield averaging over 300 pounds to the colony, spring count, and made 700 percent of stock besides, all having plenty of honey to go nicely through the winter. J. M. HICKS.

Chillicothe, Ohio.

EDITOR AMERICAN APICULTURIST:

In renewing my subscription for 1886, I beg to return thanks for the great pleasure and information I have received through the three volumes I now have of your valuable paper.

The past season in our section has been a very disastrous one to apiarians. In fact we have had two consecutive failures in the honey crop. The drought of 1884 cut short the white clover yield, in fact lost to us entirely; the very severe winter of 1884 and 1885 dealt a terrible blow to the colonies scarce in stores, and the first of May 1885 found us with few and weak colonies. Decoration day brought us a tremendous wind and hail storm, cutting short the flow of honey from locust; and the white clover, having been entirely killed, yielded us nothing, so that the season of 1885 gave us but about two or perhaps three weeks only of nectar and that from fall flowers.

Some very careful apiarists among us have come through so far in good shape, but have had to feed heavily, but the majority have lost heavily. I know of one man who has lost thirty stands.

Our prospect for this season is good. White clover during the past summer has grown well and is now out of danger and we look to do well with what bees remain. Hoping for prosperity to the "Api." under its change of owners,

I am yours truly,

FRANCIS W. BLACKFORD.

Masqueton, Iowa.

Enclosed find $1.00 for American Apiculturist.

Bees wintered well, no loss, all flying to-day and cleaning house. No dead bees in hives, comb bright and clean. Wintered in cellar on natural stores.

Long live "Api."

A. M. FIRMAN.

Sterling, Ill.

I consider the "Apiculturist" the most impartial paper on the subject extant.

W. A. E. MURPHY.

Pawtucket, R. I.

The twenty-seven colonies packed on summer stands are all alive and very strong, with the exception of one which is queenless; several of the combs are partly filled with brood.

You can count on my hearty support so long as you give us as good a monthly as you have the last three months.

SAMUEL CUSHMAN.

Burnt River, Ont., Can.

P. H. MORANT & CO.,

GENTS:—I have received the February number of the "Am. Apiculturist." Thanks for the same. I find in it an article written by Mr. Corneil of Lindsay, Canada. I have no hesitation in saying it is the best article I ever read touching the same subject. It is like the Dutchman's horse, "a big one done up in a small compass."

The paper should be in the hands of every beekeeper and kept for future reference.

JOHN T. BEECH.

BRIEF REPORT OF THE NO. WESTERN PA. BEEKEEPERS' ASSOCIATION.

At the late interesting and profitable convention of the Northeastern Ohio and Northwestern Pennsylvania Beekeepers' Association, held at Meadville, Pa., much information of practical value was given out.

The following is the amount of colonies represented and the yield of honey.

No. of col., fall of 1884, 3,771.
" " " spring " 1885, 1,838.
" " " fall " 1885, 2,958.
" lbs. comb honey, 1885, 48,890.
" " extracted, 1885, 12,240.
" " beeswax, 1885, 488.

PRICE REDUCED.

Mr. Alley has reduced the price of his "Handy Book or 22 years' experience in queen-rearing," from $1.50 to $1.10 by mail, or the book and drone and queen trap are sent by mail for $1.50. This is a fine chance to get these two articles at a very low price.

HOW IS THIS?

To each new subscriber and those who renew at once for one year, we will send one of ALLEY'S NEW REVERSIBLE SECTION CASES, each containing enough 1-lb. sections, made up for a standard Langstroth hive, or any other hive that does not take more than 28 sections in one case.

In ordering, please give the exact dimensions of the *inside* of the cap of the hive you desire to use the sections on.

As the entire case, complete weighs less than ten lbs., the charges will not exceed 50 cts. to any place the Am. Express reaches.

This case is new, and its novelty and simplicity is admired by all.

Any one who will send ten new subscribers and $10 will receive one of the "Bay State Reversible Hives" complete (except winter case).

NEW TESTIMONIALS.

I want to say a good word for the Alley "Drone and queen trap." I purchased ten, and have had them almost in constant use the last three weeks, and I must say that as a drone, queen and swarm catcher, they cannot be excelled.

M. BORERS.

Gonzales, Texas, April 6, 1886.

GOOD WORDS FOR THE QUEEN TRAP.

The "drone and queen trap" at hand, and certainly promises all that is claimed for it, besides being a marvel of neat workmanship. Think I will order a quantity, and thus do away with the intolerable trouble of climbing for swarms.

MRS. H. HILLS.

Sheboygan Falls, Wis.

Trap received. Am delighted with it and consider it the "*ne plus ultra*" in the bee line. Send me one dozen. W. M. HEILIG.

Lutherville, Md.

What Cheer, Iowa.

I have heard a good deal about the Alley "drone and queen trap" and think it is the very thing I need, for the reason I cannot be at home at all hours of the day to attend to them.

G. R. PRATT.

SPECIAL NOTICES.

The Alley drone and queen trap was patented Nov. 11, 1884. I hear that many beekeepers are making and using them without the proper right to do so. Rather than have any of our friends lay themselves liable, I will sell farm rights at a low figure, to any who desire to make and use the traps. Terms given on application.

Address,

HENRY ALLEY,

Wenham, Mass.

We have in our office one of Mr. J. M. Shuck's invertible hives, section case, entrance feeders and large feeder to use at the bottom of the hive, and a lifter for inverting the hive, a very ingenious device. All the above will be shown our friends when they visit the "Apiculturist" office.

Mr. Shuck sends out a neat thirty-two page circular giving a full description of his hive and other supplies. His address is Des Moines, Iowa.

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will be

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and make splendid books for the library or centre table. If you want works that give the largest amount of valuable information on bee culture you should certainly order the above. The four volumes contain

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of valuable reading matter, comprising articles from the pens of the most prominent writers and best apiarists in the world. All for the small sum of $2.50.

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SPECIAL NOTICE.

The Apiculturist will be sent three months to any address for 25 cts., six months for 50 cts. or one year for $1.

To each new subscriber and to those who renew their subscriptions promptly, we will send likenesses of Rev. L. L. Langstroth and the late Moses Quinby.

For the American Apiculturist.

AN EXPERIMENT.

BY S. CORNEIL.

ONE reason why some beekeepers prefer having their hives closely sealed above in winter is because they believe that a solid board cover confines the heat of the cluster better than a quilt of wool, or any other porous substance. They say that the warm air rises to the top and escapes through the porous cover, and of necessity there must be a loss of heat which with a solid board cover would be retained.

According to Sir Wm. Thompson's Table of Thermal Conductivities in the Encyc. Brit. 9th ed., wood conducts heat nearly five times as fast as does carded wool. To test the matter practically I took two eight frame Langstroth hives without either bottom or top and removed the frames. One of these I covered with a pine board of seven-eighths stuff, but before screwing the cover down I inserted rubber packing in the joints to make them air tight. I covered the other hive with a quilt of wool 18x20 inches and weighing a pound and a half. Strips were fastened above and below the quilt to press the wool together. In each of these covers I inserted the stem of a thermometer so that the bulb just came through on the lower side. I next spread about two inches of granulated cork in the bottoms of two of the outside cases of my Quinby hives. These cases were six inches longer and eight inches wider than the Langstroth hives. In each of the Quinby hives I placed two covered honey pails, filled with hot water, and as quickly as possible I placed the bottomless Langstroth hives over the pails and packed between the walls with granulated cork. Each pail contained seven and one-half pounds of hot water. My object was to place in each hive the same amount of heat and as far as possible to prevent its escape in every direction except through the covers, in order to observe whether the air would cool faster in the hive covered with a quilt of wool or in the hive covered with a board. The thermometers used were a pair belonging to a Mason hygrometer made by Nigretti and Zambra, London, and were not marked for any higher degree than 112. On ac-

count of the water being too hot for the range of the instruments, five hours elapsed before the temperature in the hive covered with wool fell to 111°. The following readings were subsequently taken.

TIME OF MAKING OBSERVATION.	TEMP. OF HIVE COVERED WITH WOOL.	TEMP. OF HIVE COVERED WITH BOARD.	TEMP. OF AIR OUTSIDE.
Mar. 25th, 4 P.M.	111°	104°	33°
" " 5 " "	107	100	33
" " 6 " "	104	96	33
" " 9 " "	93	85	31
" " 10 " "	90	81	30
" " 11 " "	87	77	28
" 26th, 8 A.M.	66	57	30
" " 9 " "	65	56	33
" " 4 P.M.	59	52	46
" " 7 " "	56	49	33
" " 10 " "	53	46	31
" 27th, 7 A.M.	46	40	31
" " 12 noon.	47	45	53

It will be noticed that while the temperature of the outside air was lower than it was in the hives the temperature of the hive having the board cover remained lower, but when the outside air became warmer the board cover allowed the air in the hive to rise 5° while in the hive covered with wool it only rose 1°.

I shall probably repeat the experiment next winter when the weather is colder, and I shall use instruments having the scale marked on the stem, and having a range as high as 212°. The readings should have been taken every hour as long as the temperature in either hive continued to fall. If the pails were left uncovered so that the air in the hives might become damp, and if the entrances were left open so that the hives would have lower ventilation, I would like to test the air in each for moisture, because besides being a bad conductor of heat, wool has the property of passing off moisture without causing a chill, which makes it so eminently suitable for clothing for ourselves. I should expect to find that with the same amount of heat, the same amount of moisture, and the same lower ventilation, the air in the hive covered with wool would be dryer than the air in the hive having the board cover. I think by a little ingenuity a Mason hygrometer could be placed in the covers so as to give correct readings for humidity. If any of the readers of the "Api" will take the trouble to try such experiments next winter, I shall be pleased to correspond with them as to details. We can then compare results and we shall probably arrive at something reliable and useful.

Lindsay, Ont., May 16, 1886.

For the American Apiculturist.

BREEDING BEES— THE COLOR LINE, ETC.

BY A. NORTON.

PERHAPS it is a good thing for conservatism that the extreme views set forth by those who have hobbies tend to neutralize each other and to produce more moderate opinions in the minds of unprejudiced readers.

Judging by the arguments we often read, beekeepers hold very unlike beliefs about many matters in their calling; and, among others, see the color line drawn with considerable sharpness.

The greater portion of the articles in the bee papers will be found on the side of disregarding color, although sometimes they almost seem to be particular about it in a negative way.

Therefore, we find many who advocate, especially with Italians, the breeding of darker bees; and many others who advise such a system of breeding as would tend to produce motley and irregular markings among our yellow races. These ideas

probably spring from a belief that light color and bright bands are prejudicial to hardiness and industry. Let us see if the other side to this question has not likewise firm foundation. In taking the various races as nature gives them to us we find some races black and some yellow. Be the two circumstances connected or disconnected, we find that yellow races are in most respects the better. Now we avail ourselves of good opportunities and breed the better varieties; what standards shall we set up and what features shall we strive to retain? Unquestionably, the one object among practical bee men is profit; therefore, those characteristics of bees that affect the amount of honey stored are the ones that should be kept and cultivated by select breeding and at all hazards. But this may be done without sacrificing color, and beauty in bees adds to the pleasure of beekeeping which is an item at least. Bright color does not necessarily impair industry.

The Italians have grown steadily in favor since the time of their introduction; and one of the chief traits to recommend them is their superior industry as compared with the blacks. Yet the three bright golden bands that help to render them so beautiful have been recognized from the first, and the talk about dark, leather-colored ones is a matter of later date.

The Cyprians and the Syrians have proven themselves wonderfully brave, hardy and energetic; yet their color is of surpassing brightness and beauty. The effect of their yellow bands is heightened by the profusion of yellow hairs distributed on other parts of their bodies, and yet, after nature has given us the yellow races superior to black ones, we are told that we may make them still better by breeding them darker.

Again, color in bees does not necessarily influence their disposition either way.

The Italians in their purity are as gentle as any manipulator could wish. The still brighter Albinos—a variation from the Italians—are considered even more peaceable. But the black bees, as long as their courage holds out, viciously resent intrusion. On the other hand, the Cyprians and the Palestines, as beautiful as the Albinos, are fierce and warlike, while the gray Carniolans are as harmless in disposition as any bees known. Color, therefore, is not of itself a controlling factor in either of these useful traits, neither is it in prolificness. How, then, may color be developed prejudicially to other points?

I will say by way of acknowledgment that it may be done by breeding for appearance solely, regardless of other points. To illustrate:

Of several queens that I raised last year from a somewhat dark Cyprian mother, the majority were like the mother in appearance, but a few were light colored and very handsome. The colonies produced from the latter were this spring among the most prosperous I had; so I used these light queens for drone mothers and I expect none but good results. But had these queens been the mothers of less active bees instead, and had I in my anxiety to get beautiful stock bred from them just the same, I would have committed act no. 1 toward deteriorating my stock. This might have given a start down hill, the result of which would depend on my committing act no. 2 and so on. Geo. E. Waring, an authority on Jersey cattle, deprecated breeding those animals for "black points," not because black markings on nose, tip of tail, horns, etc., were prejudicial to dairy qualities of necessity, but because they might be so by accident after the same manner. Poorer animals for butter might frequently be bred from, just because they happen to have these fancy

points, and this would cause a retrograde in more practical merits. But time has shown that Jerseys with black points have not frequently enough been inferior dairy cows to very much lessen the value of that particular strain of the breed.

I might mention many other examples, but I will content myself with a few. No fowls have been bred more particularly for markings than the various breeds of Games; yet their pugnacity of spirit remains unimpaired.

The Dark Brahmas have also been bred with an eye to the most rigid accuracy of color, and yet they are still as large, as hardy and as profitable as they ever were. Bantams have suffered the breeding down of size and likewise the establishment of rigid standards of markings without losing that comical, self-sufficient bravery that has always characterized them. And so it is with the yellow races of bees. It does not follow that any connection exists between their color on the one hand and their valuable qualities on the other. But nature, in some mysterious way that shows forth in its effects upon all animals and plants, has in Italians and Cyprians, Syrians and Palestines, bred their yellow color conjointly with traits that render them most valuable to mankind.

Why cannot we in applying the aid of science to nature continue likewise and, instead of separating points that we find joined together, strive to blend beauty and profit still more harmoniously by breeding for both at once? In my opinion, a practical and beneficial result of the discussion of this question would be realized in the establishment of a queen breeders' association with membership wherever queens are raised in America. The object of this association would be to secure uniformity of purpose and action among dealers and producers.

Some standard as a test of purity and of distinction between races being much needed, such an association of breeders could establish a correct and generally recognized one. Improvements in certain directions upon races as we find them can result from proper breeding.

Such a body, by securing concert, would insure system and enhance success; and the time would more surely come when bees, the progeny of American reared mothers purely mated, would be better than those from imported queens.

The matter of breeding for practical qualities and looks conjointly could be regulated, and also the much mooted question of rearing cheap queens could be settled; for such a body of breeders would have a dignity attaching that would give its discussions weight. It is needless now to enter into details of constitution and of means of securing authority among its membership. I will only say in conclusion that. such associations already exist, not only in the breeding of animals and fowls, but also in the improvement of special breeds of the same. I believe, that a general association of queen breeders, or separate organizations for the different races would be productive of good results to both dealers and patrons.

Gonzales, Cal.

For the American Apiculturist.

HAVE WE LEARNED AS YET ALL THERE IS TO BE KNOWN IN REGARD TO APICULTURE?

BY J. E. POND, JR.

MR. JAMES HEDDON in his new work on apiculture (which by the way I do not now propose to criticise) has given the public what he claims to be a new system of bee-keeping; and also describes what he

claims to be a new hive that will revolutionize the science of apiculture in practice. The claims made both in the theoretical part of the book, and the description of the manipulation of the hive, point us directly to the assumption that this revolution is to be caused largely though not wholly, by reversing frames either singly, or by reversing the whole hive.

The tenability of the above position is the matter I now propose to examine.

In the first place then, I ask, will the reversible principle accomplish the desired end in a simple, practical and economical manner? To this question I admit the process of reversing frames either singly or by overturning a whole hive is simply enough in all conscience; whether practical and practicable is a matter of opinion; and as to its economy to those who will have to make great changes in hives and apparatus, all will admit that it is not so. But aside from all this, there arises another question, and one that is of great importance to us all, and that is contained in the question that forms my text; or, in other words, is the method described by Mr. Heddon taken as a whole, and in connection with his hive, a step in advance? on the contrary, has he not in his book lost view entirely of one of the great principles that govern apiculture, and in the adoption of which we can only accomplish our ends economically, and most successfully?

There is a principle in comb building and cell use by the queen and her bees, that is as old as apiculture, and which the late Mr. Quinby found was always carried out when he attempted to force his bees to adopt comb built on tin foundation. It is this. Bees will not seal up their brood in cells more than regulation depth, that is, deeper than are built in comb seven-eighths inches thick; and further that they also prefer to store their honey in cells much deeper than those above described. This being the case, have we not, in practice, a plain simple and easy way by which we can induce our bees to occupy sections, which seems to be the main object of reversing? I have fully considered this matter, and have made thorough tests in regard to it, during the last five years, with the result that I know positively that it will work every time, and that the results are always the same.

My method is not new in one sense, yet I have never seen it advocated. Perhaps it may have been in the minds of others, still it does not seem to have assumed sufficient prominence to cause it to be considered of importance. It is based on the habits of the bees in regard to storing honey and rearing brood. It is as follows: in early spring when I make my first examination, I remove the frames, and shave the comb carefully to just seven-eighths of an inch in width. I use the L hive, and frames with seven-eighths of an inch wide top-bars. After the combs are thus shaved down, I replace them just bee space apart. When the honey season opens, sections are at once placed on the frames, and the bees at once occupy them. The theory of this is seen at once, and I defy any one to controvert it. In practice I have fully proved it during the last five years, and I find the results are always the same. And why should they not be? Bees will always store their honey above their brood: the advocates of reversible frames admit this as the basis of their theory. They don't store honey readily in shallow or brood cells; this I presume will be readily admitted. Now by keeping comb just seven-eighths of an inch thick, and just bee space apart, we get the brood chamber filled with brood, and find practically no honey stored there, but on the contrary it is stored at once where there is plenty of room, viz., in sections. The position

I take I deem of importance to the fraternity, in several particulars. It is simple and requires no extra labor. It is economical for it requires no extra expenditure from frames or appliances. It can be applied to any frame hive, and by any person, no matter how small his experience. In order to get ready for winter again it is required to be sure to remove a frame or two, space the balance a little wider apart, and feed the bees enough to carry them through. This however requires very little labor. It is ordinarily done with any hive, no matter what method is used; and it is far less labor than is required in manipulating reversing frames. There is one claim made by the advocates of reversing, that I have mentioned. It is the idea that by reversing we get our frames fully filled out. As a matter of fact, however, when foundation is used, very few frames are not so filled with comb, and the few that are not can be easily fixed, without trouble or expense. I have tested this matter as I have said, carefully, and I think so well of it, that I desire it to be generally known, and to be fully tested. I hope and trust that full tests will be made, and full reports given in regard to it.

Foxboro, Mass., April, 1886.

For the American Apiculturist.

COMB OR EXTRACTED HONEY—WHICH?

BY ALLEN PRINGLE.

THE question is often asked, especially by beginners in beekeeping, "Which kind of honey shall we produce, comb or extracted?" Which is more profitable? After upwards of twenty years' experience my decided conviction is and has been for some time that if only one kind is produced the extracted is the more profitable, but that it is more profitable to produce both conjointly than either one exclusively, except under very special and exceptional circumstances. I hold this to be true for several reasons. The first is that if the apiarist does a local trade (and every beekeeper ought to have more or less of a home market for his product) his customers will imperatively call for both kinds of honey. Some will have none but comb honey, and if you cannot supply them they will purchase elsewhere and a good future customer is lost. I say a good *future* customer because he may not be a good customer at *present* or so long as he sticks to the comb honey, for that is really less profitable to the producer, unless he get a price higher than that usually obtained for comb honey. But these sticklers for comb honey and comb honey only, can almost always be converted to the extracted honey if you manage them right, and then they become profitable customers. I just now have in mind a customer of mine whom I supplied for two or three years with the choicest section comb honey—he would have nothing else. He was one of your stubborn Englishmen—was a dry-goods merchant, and had a large family. He didn't care so much about the difference in the prices of comb and extracted honey, but was prejudiced against the latter (the "strained" honey) and was biassed in favor of the comb and would have it anyway." I finally laughed the prejudice out of him and argued the extracted honey into him—*i. e.*, metaphorically speaking. I chaffed him about eating beeswax. I said, "if you want to eat beeswax go to the apothecary and buy it at fifty cents a pound after first getting a medical prescription, and then eat it *secundum artem;* but don't make me a party to turning your stomach into an apothecary shop!" I showed him that the comb was merely wax and sediment and that the extracted

honey would be much more wholesome for his family who ate freely of honey,—that it was his duty to furnish them with the more wholesome article, etc., etc. Next time I sent him both kinds; and still the next time both kinds, but this time he said "Nay, you have argued extracted honey into us and now we want extracted honey." Again there will be a few customers who must have the best comb honey and are willing to pay a high price for it, and of course comb honey is just as profitable to the producer as extracted if he can get enough for it.

The next reason why we should not confine ourselves exclusively to one kind is that the weather is often unfavorable for the production of one kind and favorable for the other, and sometimes this is characteristic of the whole season through. We all know that a cool season is unfavorable for the production of comb honey, and the comb honey specialist who will have nothing to do with extracted honey often learns this to his sorrow and cost.

Another reason for the joint production is that some colonies in an apiary take so readily to the comb honey and turn out so superb an article that it is really a pity to *waste* them on extracted honey. Others can neither be cajoled nor coerced into the sections but will gather and store below like beavers, and by all means let them do so. Of course the old, professional, comb honey codgers are joined to their idols, and with their idols let them stay; but let beginners strike off in both directions, produce both kinds. That it is easier to produce extracted honey goes without saying, and hence the novice generally makes his *debut* and his first grand achievement in that direction. But he need not fear to take a hand in on the other side. If he but remember two or three fundamental principles he can produce comb honey, and choice comb honey, and this is best secured by putting the sections (only a few) immediately over the brood-nest. Second, contraction of brood chamber. When your colony gets populous and the honey is flowing crowd them up and place your sections on and your chance will be good for some nice comb honey. If they take a notion to swarm and leave your sections not half full, never mind but follow them up and beat them up and beat them on their own game. If you have the old queen clipped (and you ought) cage her as she comes out, set the old hive aside, place your new hive with empty comb and a couple of frames of brood on the old stand, contract the brood chamber with division boards to rather small size, put your caged queen inside, open the parent colony and shake off nearly all the bees left on the frames in front of the new hive, put the case of half-filled sections from the parent colony on to the new colony and your work is done, for by this time the swarm may be returning to the new hive on the old stand. At any rate they are sure to return be the time more or less. The parent colony you will of course carry off to a new stand, make it warm because of the scarcity of bees, contract the entrance and they will take care of themselves. You will thus have the upper hand of those old bees and half filled sections which will now in all probability be soon full.

Another and final reason for the joint production is that no apiarist can make a finished and effective exhibit of his product either to customers or at public expositions without both kinds of honey. The surpassing beauty of white comb honey nicely finished up in beautiful white sections and tastefully exhibited, never fails to attract the attention of even the least æsthetic.

Selby, Lennox Co., Ont.

For the American Apiculturist.

THE DRONE AND QUEEN TRAP.

By Mrs. Sherman.

Having received quite a number of letters, making inquiry about the use of Alley's Combined Drone and Queen Trap, I will try as best I can to answer them through the "Api," as I have not time to answer each one separately. I prefer putting the trap at the entrance just as the bees begin to swarm, to keeping it there all the time, as I find when it is kept there all the time, that the bees lose a great deal of pollen. I have never failed to get the queen when it was put there in time. On one occasion, however, I remember having caught the queen, and as I wished to return the bees to the same hive, as I was then wanting surplus honey instead of bees, I waited patiently for them to return, which they did not seem inclined to do; I finally got a long stick and jarred them off the limb to which they immediately returned. I again jarred them off and they again clustered in the same place. I then got a darkey living near by to come and saw off the limb. I returned them and saw the queen run. I had returned the queen that I had secured in the trap, so I now had two queens in one hive. I put the trap at the entrance and let them settle the matter on the "survival of the fittest" plan.

Next morning I had a dead queen in the trap. They gave up swarming and went to work with apparently redoubled energy and gave me a fine amount of surplus honey. Just here let me say that I raised the hive nearly an inch from the bottom board, so as to thoroughly ventilate the hive, which is of the utmost importance in our hot climate. I would not think of using a hive with a permanent bottom board. I have never, except on one occasion, known the queen to come out when the bees first begin to swarm. I have never to my knowledge had a "virgin queen" come out with a "prime swarm." In 1884 I had one colony that cast four swarms; as I was wanting bees then that was all right; now, I have enough and want honey instead of bees and do not allow them to swarm so much. Swarming can be controlled to a great extent by the use of the extractor, thorough ventilation and the use of the trap. Another great advantage of the trap is in destroying worthless or useless drones which are constant consumers and non-producers. Still another use: in case of robbing it is the best thing that I have ever tried. The robbers seem to think that there is something wrong. They do not like to go through the perforated zinc into the trap and then in the hive. If this does not answer all the queries, I will refer you to Mr. Alley of Wenham, Mass., the inventor of the trap.

Salado, Bell Co., Texas.

For the American Apiculturist.

NEWS FROM WYOMING

By Cordelia Mead.
(One of our youngest readers).

Mr. Editor:—As I have never seen any communication in your excellent bee journal from the far west, especially none from your young readers, I venture to send you a few lines for the first time. I am quite young, only twelve, but can send you many interesting items from this new country if you can spare the space; but I will make this letter as brief as possible. We have the first honey bees ever brought to Wyoming Territory, and they store up lots of white and fine flavored honey from the wild mountain flowers, and stand the winters as well as in the eastern states.

Our ranch is seven thousand feet above the level of the sea, but it seems to be very healthy here for bees and poultry. Cattle, horses and sheep grow fat on the all-the-year-round grazing lands.

We live beside a clear cool mountain stream in a pleasant valley surrounded on all sides by grand scenery. In the mountains are found all kinds of minerals, gold, silver, copper, lead and iron ores. My pa has a large collection of minerals, precious stones, relics, fossils, petrifications and other curiosities found in this great Rocky Mountain region. Wyoming is about the best place for large game in the United States. It is visited every year by wealthy tourists and hunters from the eastern cities.

Oh, I forgot to inform you that we have a live elk and antelope, very tame and interesting pets, will eat grain, vegetables or bread out of our hands, and never leave the premises. They were caught while young and raised on cows' milk. We have become so fond of them that we have refused good offers for them.

Terris, Wyoming, 1886.

FOREIGN NOTES.

By Arthur Todd.

The use of the vapor of carbolic acid as a substitute for smoke, in controlling bees, making them vacate any particular part of a hive, etc., seems to be gaining ground in the old country. A writer in the *British Bee Journal* depicts a form of blower containing a sponge dipped in diluted acid. It is no more nor less than a modification of Mr. Jones' (Canada), and my own practice, in using a sponge dampened with chloroform inserted in the tube of any ordinary smoker. The great advantage I have found in using chloroform is the getting rid of the lighting up and occasional burning of one's fingers.

A new race of bees, viz., "South Africans" is likely some day to be put on this market. Dr. Stroud of Port Elizabeth, Cape Colony, writes, "As to the race itself I regard it as the outcome mainly of the old Egyptian bee crossed by some grayer variety, probably the Cyprian, and finally by the black bee. The special features and characteristics of all these, the "Africans" in a more or less degree retain.

In this their native country, they undoubtedly exhibit all the fine traits and reputed excellences of the much lauded "Ligurian" and "Carniolan" with none, or traces only, of their recorded drawbacks. After fifteen years' experience of "Africans" against ten years of closest intimacy with ordinary European bees, I can safely say that under existing conditions their excellence is of a very much higher order, and this without disparagement of my old friends. Dr. Stroud reports this race as very healthy and very prolific, the weight of bees in an ordinary stock averaging ten to twelve pounds. Working capabilities high, early and late at work if any honey to be had, even working by moonlight.

From the description I should say the bee is practically the same as that in the north of Africa, and worked by me in Algeria. The same bee in fact, that has been dubbed by Frank Benton as the "Tunisian Bee."

"Coffee" as an antiseptic medicine to cure foul brood is recommended by Dr. Dennler the editor of the Alsace Bee Journal. The remedy is certainly very simple, and found in most households. Dr. Dennler recommends dusting all the in-

fected cells with very finely powdered coffee. An excess of coffee powder would do no harm, bees would simply clean it out. Being employed dry it would absorb any moisture, and so assist the bees in work of cleaning. As a preventive, Dr. D. advises mixing coffee with the water put out for bees to drink.

Monsieur Bertrand (of Swiss Bee Journal), in criticising this coffee-cure, says he heard a commercial drummer one day say "Roast duck is a good dish, but to appreciate it, one must eat it himself" and so recommends Dr. Dennler (who it appears personally never tried the remedy) to get a diseased colony, dust it all over with coffee, give it a good strong cup every morning, etc., etc., and then report results from actual experience.—Very sensible, Mr. Bertrand!

I lately drew attention to an uncapping machine perfected in Italy, and exhibited there. In England, Mr. Simmins has brought one forward for sale, and gives a drawing of it in the *British Bee Journal*. He states that the first principle of this machine consists in its having two oscillating knives, which, driven by foot power, have a reverse motion, while the comb is passed down between them by the operator, and the cappings are removed from *both sides at once*, in the quickest manner possible. These drop into the upper case which has a strainer at bottom, through which the honey drains into the lower vessel, where it can be drawn off. The edges of the knives are serrated, making them perfect for this particular purpose. Between the knives, at either end, are guides arranged to take the end rails of the frame, keeping such in position while passed through by the operator.

The upper and lower cases are readily parted for the purpose of cleaning; and all the parts can be renewed if necessary.

For use in this machine, all the frames run for extracted honey should be finished between dividers, and then they can be rapidly passed through the uncapper, before being placed in the extractor.

Mr. Simmins states that the rapidity of manipulation pays for putting in dividers to secure level building of combs.

Phila., Pa.

For the American Apiculturist.

CANADIAN DEPARTMENT.

By R. F. Holterman.

Bees doing well at this date, May 12. A number report their bees hanging out full complement of combs in the hive. Prospects well, perhaps never better. Apple bloom is just coming in with us; the earlier varieties are in bloom. Clover promises well. Although winter-killed in low undrained land generally, there is an abundance. Farmers are sowing alsyke in larger quantities, for seed and meadow. With us alsyke clover has proved itself a sure honey crop for the last five years and the quality is generally considered superior to honey from white.

Brantford, Canada.

EDITORIAL NOTES.

What is called the "contracting system" has great excellence for a class of small beekeepers who wish no increase of colonies, but to get all the honey out of their new swarms they can. Hive the new swarms on four or five frames of comb, filling the rest of the hive with dummies, and put the sections right on at once. All the honey will be put into the sections, and at the close of the harvest these small swarms in the brood

chambers can be united, or broken up, and enough saved to keep the number of hives desired, good. Old cost aside, wide frames make good dummies. Rip off the tin separators, tack thin one-eighth inch boards into the sides, and hang them in the hive just as though they were the outside combs. Access to regular sided section cases covering the whole top of the hive is thus preserved.

MANY apiarists think brood combs should be spaced one and one-half inches from centre to centre even when brooding is going on actively. In our experience one and three-eighths is the proper distance, but we have worked them successfully as close as one and one-fourth inches. This latter spacing gives three-eighths of an inch between the surfaces of the capped brood, but five-eighths of an inch in cases where the combs are spaced one and one-half inches, is too much, and will greatly hinder the extension of the brood. Wide spacing is also objectionable in working for comb honey, as it affords room for too many bees in the brood chamber. Evidently, no greater mistake can be made than to space brood combs too far at part.

No bee-paper, as far as we can judge, receives as hearty a support from beekeepers as it should. Why is this so, friends? How many of the readers of the various bee-journals would like to see them wiped out of existence? Not one who reads them would. Now, friends, the amount that is required to subscribe for all the bee-journals, one year, is not as much as the income from one good hive of bees. Even the circulation of *Gleanings*, whose proprietor claims to have 10,000 customers for bee-supplies, has never quite reached a circulation of 8,000 copies and last winter it ran below 5,000.

Although every mail brings us from one to a dozen subscribers, we feel bound to acknowledge the fact that our list is not what it should be. We know why it is, in most cases, that people do not forward their subscription. They will get a bee-paper to-day, look it over and say: "well, I guess I will send a dollar and get this paper; I can't send to-day but will in a day or so." Then it goes on and no more is thought of the matter until they receive another paper. Now, friends, when you read this sit right down before you forget it and enclose us one dollar, at our risk, and we will send you the "Apiculturist" for one year. We will leave it for you to say at the end of the year whether you have received your money's worth or not. If you think you have not call for the amount and we will return it.

OUR readers will notice that in this number there is a change in the question and answer department. The short answers to questions were so much like the published reports of the proceedings at bee-conventions that they were of little or no account, and did not give the desired amount of information. In future we hope to have all questions answered in full. If our readers will please propound questions we will get the best and most experienced apiarists in the country to answer them. You know the question and answer department originated with the "Apiculturist." A bee-journal without such a department is like a strong colony of bees that has no queen.

—In the July number of the Apiculturist, Mr. Alley will show the difference between rearing queens by the old methods and the new,

also, the improvements made within a few years in this important branch of bee-culture. The old way and the new way of having cells built will be so illustrated that even the novice will not fail to see the advancement made in the modes of rearing queens.

—If any of our readers would like to try our method for introducing virgin queens, as given in the May number of the "Api," we will ship such queens by mail and warrant safe arrival for fifty cents each. This will be a good way to introduce fresh blood into the apiary by crossing the queens with drones of some colony having desirable points. We will also receive virgin queens of any race, have them fertilized and return them to the shipper at the above price. This will accommodate those who cannot get their queens purely mated. Last season we did much of this business with good success. By adopting this latter method one will be sure to avoid in-and-in breeding.

—During the past ten days we have had one of Muth's cold blast all-metal smokers in use most of the time, and find that it works perfectly in every respect. We had no rotten wood at hand and so made a wad of heavy paper, which, by the way, is excellent for smoking bees. We can furnish these pipes by mail for seventy-five cents or by express for fifty cents.

—If all the sections sent out by Dr. Tinker are like the sample sent to this office, we must say that no dealer in the world can excel them. This is not intended as a "slop-over" puff, but is our candid opinion. Send for a sample and see if we are not correct.

—It is said that some of the new style hives are made of such poor material and show such poor workmanship that they are practically worthless. We have often condemned the producer and manufacturer of worthless goods. Don't throw your money away by purchasing cheap, trashy supplies. Several parties sent to this office for estimates of certain apiarian fixtures; we put the price down so that we could not make any profit on any of the goods, but did not get the orders. We beat the bush, and, in so doing, were the means of "grinding" down prices for some other dealer who "caught the bird." Probably our friends got their goods at a lower price than we offered, but there is no doubt that they also got cheaper supplies.

When anything goes from this office we are ready to guarantee its quality in every case.

—Customers who order queens will please state the time they are willing for us to hold the money in case we cannot fill the order by return mail. Occasionally there is a great rush for queens, or the weather has been unfavorable for queen-rearing, and thus there is delay in filling orders promptly. However, we shall run a large number of nuclei and will try to be prepared for any emergency. Consult our price list for queens before ordering.

—The May number of the Apiculturist contains several of the best and simplest methods for introducing queens.

—From time to time we shall venture to advise our readers concerning anything relating to bee culture. Our opinions may be regarded by some of our readers when we state the fact that our experience in bee-culture covers a period of thirty years.

—Those who publish a monthly bee-journal may take courage from the fact that the best agricultural papers, and those having the lar-

gest circulation and are most successful generally, are those published but once a month.

—Customers who order the queen and drone-traps will please state whether they have at hand suitable nails and tacks for putting them together. If not, we will send for ten cents, all the nails needed, making $3.60 per dozen for the traps in the flat.

—If you want to know the best methods for introducing queens, see the "Apiculturist" for May, 1886.

—A good method for forming nuclei may be found in the "Apiculturist" for June, 1886.

—There is no better work on bee-culture than the bound volumes of the "Apiculturist" commencing with the May number, 1883, and running to January 1, 1885. These books are handsomely bound in cloth and are sold at a very low price.

APICULTURIST BEE FARM NOTES.

By Henry Alley.

THE QUEEN NURSERY AND HOW TO USE IT.

The more beekeepers learn about the queen nursery, the more they seem to appreciate the advantages of such a valuable implement of the apiary. We do not expect that the queen nursery will come into general use, but nearly all beekeepers need more or less such cages (if not a full nursery) as are here described.

As but few understand the different uses to which the nursery can be applied, we will give a brief description of one that has been in use for a long time in the Bay State Apiary.

A queen nursery is a set of cages so made that it requires only about eighteen of them to fill a Standard Langstroth frame. Such a cage, illustrated by Fig. 1, is merely a block of wood $2\frac{1}{2}$ inches square by $\frac{7}{8}$ of an inch thick, with a hole $1\frac{1}{2}$ inches in diameter made through it; both sides are covered with wire cloth. Two other small

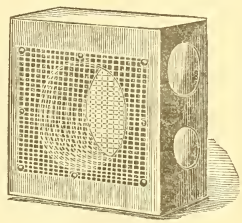

Fig. 1. Nursery Cage.

holes are made in one edge of the cage. One of them is used for inserting a queen cell and also as a door for putting bees into the cage when necessary; the other for a receptacle for food,—which consists of honey in a sponge, or of sugar and honey, either of which works satisfactorily. Fig. 2 represents the full nursery of eighteen cages.

As we have devised a new nursery which is a great improvement on the above, I will now describe that.

The new nursery cage is $2\frac{3}{4}$ in. long, 2 inches wide and $\frac{7}{8}$ of an inch thick. Like the old style it is simply a block of wood with a hole made directly through it. It also has a cavity in one edge for inserting the food. It takes twenty-four such cages to fill one Langstroth frame. Only one side of this cage is covered with wire cloth, while

on the other side a tin door or slide runs in grooves, the same as in a mailing cage we devised several years ago, and is now described on page 6, of A. I. Root's circular. We do not exactly like the metal door, but such an arrangement is so convenient and handy withal, that it was adopted. This is used as a nursery cage, for introducing or for shipping queens. Now, while all beekeepers will not need a full nursery, there is no apiarist but what will have use for a few such cages sometime during the year.

in the apiary; remove a frame of brood and adhering bees from a strong colony (without the queen) and place it in the box. Confine the bees in the hive two days unless they are carried one mile from their former location when one day's confinement will do. While confined in the box, keep the bees in a cool place and see that they have plenty of food and water as well as air. At the end of three days, insert at the bottom of the frame a cage containing one of the young queens, placing it so that the bees can remove the sugar

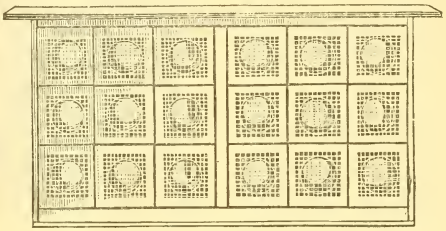

Fig. 2. Queen Nursery.

Suppose the apiarist desires to cage a queen for some purpose,—as is quite often the case—how nicely it can be done, and the queen preserved for weeks if the right kind of a cage is used. What beekeeper does not sometimes have some fine queen cells he would like to preserve had he at hand the conveniences for so doing? How nicely and quickly the cells could be transferred to the nursery cages and then the cages inserted in one of the brood combs where the queens would hatch out. Now, all this work could be done in a few moments. The novice says: "What shall we do with the queens when they have hatched?" Why, simply make a few small boxes, say one for each queen to take any frame the size of those used

food and thus release the queen. Now, you have made a nucleus and successfully introduced the new queen. Any one, however inexperienced he may be in beekeeping, can successfully introduce a virgin or any other queen by the above method which is the same as given in the May number. Now we will suppose that some one has twenty-four queen cells and desires to preserve them all. It can be done as easily and as quickly with twenty-four cells as with one. But with that number of cells, I would advise one to remove the queen from some full colony of bees and insert the nursery between two combs of brood. Take a small instrument and make an aperture through the wire cloth just large enough for a bee to pass through

(but not large enough for the queen) something about the shape of the sharpened end of a lead pencil will do, only a shoulder should be made on the instrument so that each aperture will be the same size. We can supply these small tools if desired.

The bees will enter the cages through these little doors and cluster upon the cells and the queens will emerge nice and strong and the same attention paid them as if they were on the combs instead of in cages. Then, again, the young queens are much better contented by having the bees in the cages with them. Another advantage of this method is that no food is needed in the cages, while each cage must be supplied and no bees permitted to enter it if in a hive having a laying queen; then again if the nursery is inserted in a queenless colony the queens may remain there without detriment for ten days or two weeks, or until needed, but bear in mind we do not advise anything of the kind. If possible, have all the young queens introduced to nuclei by the fourth day after they emerge from the cells. By the way, who can say that ten or more days of confinement will imperil the fertilization of a queen, since we all know that the weather is such sometimes that no queen will leave the hive for two weeks at a time to become fertilized? The danger is not in keeping a queen confined, but in passing too many days without a flight to meet the drone.

If the nursery is inserted in a hive having a laying queen, the bees may be allowed to enter the cages the first two days, but unless the nursery is removed when the queens are forty-eight hours old all will be destroyed. This matter we tested a few years ago; the young queens were allowed to live until the third day when they were invariably destroyed by being "balled" in the cages.

If I have not made this sufficiently plain for the reader to understand, I would be pleased to answer any questions on this or any other subject relating to bee-keeping.

THE LAMP-NURSERY.

To A. I. Root belongs the credit for inventing the lamp-nursery. This arrangement for hatching queen-cells consists of a tin tank filled with water which is kept at the proper temperature by the heat of a lamp. It is so arranged that the queen-cells are placed in a sort of oven. So far as we have noticed no one has ever used queen cages in connection with the lamp-nursery and allowed the queens to hatch in them, but have merely placed the cells in the oven and opened it often to see if any queens have emerged. I suggested in a recent article to the *American Bee Journal* that cages, well supplied with food, be used for the cells, as then no particular attention would be necessary until the queens were old enough to be introduced. The lamp-nursery is, no doubt, in the hands of an experienced apiarist, a good thing for one who rears a large number of queens, but the small beekeeper needs nothing of the kind unless his ambition leads him to experiment and investigate "beeology."

QUESTIONS AND ANSWERS.

QUESTIONS BY OLD "BEEKEEPER."

REMOVING SECTIONS AND CARE OF HONEY.

1. Do you remove the sections from the hive as soon as filled? What do you do with the honey previous to disposing of it, or in other words, how do

you keep honey in good condition three months after it is removed from the hive?

2. What is your method for getting bees out of sections?

ANSWERS BY G. M. DOOLITTLE.

1. Honey in appearance is much better when removed from the hive as soon as finished, but as this causes so much work, no large apiarist can do so; strictly speaking. If all hives having surplus on them are all gone over, and all finished honey removed, once every ten days, it is as often as the most of us can get to it, and quite often enough for all practical purposes. Where no separators are used a whole case must be left on until all are finished, so that more or less of the white comb is soiled by the travel of the bees, and the being obliged to thus leave the whole case after a part of the sections are completed, is one great objection to to the non-separator system.

Honey to keep in perfect condition needs a warm dry air, such as is found inside a bee hive. What would you think of a temperature of 50° with the air so saturated with moisture that the roof and sides would be dripping with water, for the inside of a bee hive during August, September and October? yet such is the place much of our nice white honey is consigned to after leaving the hive. A careful testing of the temperature of the inside of the hive gives from 90° to 95° during August and the first half of September, when it gradually lowers to about 70° as the bees become inactive and go into their winter quiescent state; while 63° is the lowest temperature I have ever found inside a cluster of bees when they were in a normal condition. By keeping honey at the temperature given above, during August, September and October and holding it at 70° until May, when it should be increased to 90° to 95° again for the summer, honey can be kept for years in a perfect state, as I have twice proved.

2. In taking off honey I go to the hive and carefully remove the cover so as not to disturb the bees when I blow smoke in at one side of the surplus arrangement. The board clamping the sections together is now taken off, and the nozzle to the smoker is pointed in at the little holes or passage-ways the bees always leave at the upper corner of the sections; when the smoker is worked vigorously so as to force a stream of smoke as far as possible through the case of sections. If done as it should be, in less time than it takes to tell it, every bee will have left their sections as far as the smoke has reached and gone below, when the sections are quickly removed without a bee on them. As soon as I came to sections with a few bees on them, I proceed to blow smoke as before when every section is taken from the hive free from bees and are ready to be carried where you wish. This is a great improvement over any of the old plans, and especially so in a time of scarcity of honey in the fields, where by any of the old plans the bees are apt to gnaw holes in our nice white cappings (so that each bee may get a load of honey) as so many of us know from past experience. By using the plan given above the bees run down into the hive below so our combs are left perfect, and clear of bees.

ANSWERS BY A. E. MANUM.

1. Sections should be removed from the hive as soon as filled and the honey well capped, in order to prevent the soiling of the combs by the bees traveling over it, as they are apt to do in their constant watch over their stores; and, to my mind, the early removal of the honey is a preventive of the moth worm making havoc with comb honey, either because the honey is removed before the moth eggs are deposited or because the honey is placed in a lower temperature than that of the hive. I have found that when honey has been left on the hive for a long time, by neglect or otherwise, such honey is most apt to be infested with worms. As soon as the honey is removed I place it in a well-ventilated room built expressly for the purpose. Here it is assorted, and all sections that have any pollen in them, if not more than *one cell*, they are placed by themselves and sold at once for home consumption, because wherever there is a cell of pollen, a brood of moth worms may be expected. In this room my honey remains until sold, without further precautions against worms. I have never been obliged to burn sulphur in order to preserve my honey, and I have kept comb-honey the year round in perfect condition and I have it in that condition to-day.

2. I use a clamp for holding my sections, and when desirable to remove one from the hive during a flow of honey, it is set edgewise on the ground near the entrance of the same hive

and gently rapped or jarred with my closed hand or with my foot, and left there until the bees leave it, when it is taken to the honey room.

At the close of the honey harvest a different method is necessary because, if then left exposed, the bees will soon find it and appropriate it to their own use. Therefore to avoid this, I place the clamps edgewise on the brood-chamber cover and close down the hive cap and allow the bees as they leave the honey to return to their hive through escapes made of wire cloth and tacked over a hole made in each gable end of the cap. (My hive is a double walled or chaff hive and the caps admit of a plenty of room over the brood-chamber to set 100 $4\frac{1}{4} \times 4\frac{1}{4}$ sections.) By the use of these escapes the bees can pass out but cannot return. Therefore I can leave my honey there until convenient to remove it. When taken off in the afternoon the bees will be all out by evening or at the farthest by the next noon. It will thus be seen that I do not take each section from the clamp and brush the bees off, as some do, but simply let the bees leave the sections when they please. By this method I can take the honey off of one hundred colonies in a few hours. It usually takes longer to carry the honey to the honey house than it does to remove it from over the bees.

ANSWERS BY DR. G. L. TINKER.

1. Sections should be removed from the hives as soon as fully capped over. When comb building ceases, then it is imperative that they be removed or else the bees will soil the cappings with propolis and begin to empty a cell here and there and injure the appearance of the honey.

It has been held that honey has a better flavor by allowing it to remain on the hives till time to prepare for winter, but I have not been able to detect any difference. After removal from the hives the flavor of comb honey depends much upon the care taken of it. If placed in a damp, cool cellar, its fine flavor will soon be lost and the honey become thin and run through the cappings and at last get sour. It should always be kept in a warm, dry room. Ours has kept the best in a room over the sitting-room where it is very warm in summer and in winter time warmed by the fire in the room below. In this room it seldom becomes candied if left the year around and the flavor is fully preserved. The combs, if any, containing a speck of pollen should be placed by themselves, where they can be often examined for the moth larvæ. As soon as all danger from this source is past, the honey should be crated ready for sale.

2. If we had but few sections to remove we would go to the hives and take them off one by one and shake the bees down in front of the hives, but where there is a large amount to be taken, this process is too slow, and unless one is spry about it, the bees will bite into the cappings. The best plan in my experience has been to open the hive over the sections and blow in a large quantity of smoke and drive the bees down, then quickly remove the sections, when nine-tenths of the bees will be driven out before stopping to bite the cappings, and the few left may, with shallow section cases, be nearly all shaken out. The cases of sections should then be carried into a honey room with one window that may be opened outward, as often as many bees gather upon it, until all have gone back to the hives. If one has no honey room, then the cases of sections may be placed in a large box and covered with a sheet which may be lifted and shaken every little while till all the bees are out.

ANSWERS BY IRA BARBER.

1. In answering your first question as to taking off honey as fast as the sections are filled, and how it is kept in fine condition for three or four months, cannot be answered so that it will be any benefit to your readers, without taking more space than perhaps you may think is needed. I take off the sections as soon as I can after they are filled, and give empty ones, as long as there is any prospect of gaining anything by it. The honey is placed in the honey room the same day it is taken off, and is kept in a pile, until ready to case, and send to market.

A room to keep honey in should be light (the lighter the better) and should be so constructed that it may be thoroughly aired any time; in fact, every warm, dry day, and closed every damp day, no matter how warm the day may be. All cool days, a fire should be kept going and the room kept closed.

My honey room is 14 by 22 feet, and I pile the sections in tiers across the room, and leave a pass about two feet wide, next the wall, all around, so you see that none of the honey is

placed against the wall. In placing the sections, where they are piled from four to six feet high, care must be taken that they stand square upon each other so that the weight will not crush the sections.

To keep the sections bright and clean, in case any should drip, I use a strip of paper between every tier, as they are piled on. For one pound sections, cut the paper six inches wide, as that will give a projection of one inch over the sections on both sides. Newspapers are good enough for this purpose, and will pay for the trouble of using them, for every section is kept dry and clean. I place the tiers about three inches apart, so there will be a free circulation of air, and place the sections in the tier close together. Keep all sections where the capping is stained from old comb, and all that may contain bee-bread, out of the general pile, for such sections are the ones that the worms will thrive in, and may need looking after. As the pile increases in size carry in a few dozen spiders, and drop them in between the tiers of sections, and they will get a living there, and do no harm to the honey, as all their webs will be between the sections and attached to the papers, and if a worm gets large enough to move, it will be sure to be picked up by the first spider that sees it, and they are always on the lookout for a square meal. This way of keeping honey has kept mine for many years bright and clean, and quite often I commence taking off honey the first of July, and keeping it until late in November. The room should be used for no other purpose, and of course it should be free from flies and dust. Use screens at all windows, so that the bees cannot trouble in fine weather. The sections should be cleaned from bee-glue, and all ready for glassing before carrying in, but the glass should not be put on until ready to case and ship.

2. To get the bees from sections, I used swarm-catchers, for the bees to come out into.

I place an empty honey-rack on the ground, about four feet in front of the hive, then take off the honey, all there is, one, two or three sets of sections, and place it on the empty honey-rack, then set a catcher over it, and in a short time all the bees will be in the catcher, and can be dumped down in front of the hive, and the honey taken care of. By using eight or ten catchers, one can make short work in taking off the honey at the close of the season. In the honey season, when taking off filled sections to make room for more, there is no need of protecting the honey from the bees; all I do is to take off the sections and shake the bees in front of the hive, clean the sections of all bee glue and carry it to the honey room at once.

There may be better ways for taking off honey, and caring for it, for several months, but I have never seen any in the market that looks brighter than mine, and I have told you how I have kept it.

EXTRACTING, CURING AND CARE OF EXTRACTED HONEY.

1. Do you commence to extract before the new honey is capped? If so, how do you cure the honey and prevent it from fermenting?

2. What will you do in case the honey does begin to ferment?

3. Does not heating honey to a high temperature (say, the boiling point) destroy its flavor?

4. How do you liquefy candied honey and at same time preserve its original flavor?

ANSWERS BY G. W. DEMAREE.

1. I do not extract until the honey is all sealed, and properly evaporated in the hive, although such leading apiarists as L. C. Root succeed well by artificial evaporation. In my opinion, the safest way is to let the bees prepare it for keeping. I believe the defects of the old system, viz.: employing a full, upper story for full sized standard frames, and the mistaken plan of extracting from the brood chamber, suggested the necessity of artificial evaporation. I saw this difficulty besetting the old system years ago, and to counteract its disadvantages, I resorted to artificial evaporation. I found that during settled, dry weather artificial evaporation succeeded well, but if the weather was damp and showery, it did not succeed so well, in fact, artificial heat was necessary at times. After a fair trial, on a small scale, however, I found it to be cheaper and safer to employ bee labor throughout the whole process of curing the honey. This led to my shallow-case system, on the tiering-up plan. My extracting cases are so made that the frames are stationary when handling them, and I manipulate them without ever moving a frame,

except when extracting the honey. And if I have a full supply of cases for all the hives in the apiary, one general extracting answers for the season. When the cases are to be removed, the bees are smoked down, the cases lifted off and set in a "bee-escape" for the bees to have them and return home. For six years past, I have used these shallow extracting cases side by side with the full upper story plan, and the former has uniformly given the best results in surplus honey, and in time, patience and labor. While speaking of the shallow extracting case, I wish to say that it is *father* to the boasted "sectional brood-chamber hive." I used the shallow cases *tiered-up* for brood-rearing before I ever heard of the great "revolutionizing invention" which consists of nothing more than the new *words* and *phrases* descriptive of my shallow extracting cases, and applied to the "new hive." I do not fear that future historians will fail to place the matter in a true light. Some of the leading bee journals are going it headlong, just now, and perhaps they will never get their eyes open until "something drops."

2. If honey once begins to ferment, it can be saved by boiling and skimming, but it will be only fit for feeding bees. It can never be made fit for table use.

3. Heating honey changes its flavor, but it does not injure it in our estimation. We use it during the winter and spring months, in this shape, all the time, and I have never met a person who does not pronounce it delicious after partaking of it.

4. We reduce the candied, extracted article just as you would make syrup from sugar. A little water is added, the honey is melted and skimmed. Now as to the flavor of honey. Bee men do not like to own it, but it is a fact, and always has been and will be a fact, that the virgin flavor of honey is peculiar to the internal heat of the hive, and is never exactly the same in flavor and smell after it once becomes cold. Honey in all its glory is found nowhere else than fresh from the bees. Nevertheless, as a regular diet, I would prefer the melted extracted honey in the shape of a most delicious syrup.

ANSWERS BY G. H. MARTIN.

1 I use a frame eleven inches deep, and have always extracted honey from them when the honey is capped over one-half or two-thirds of the surface. I have never had honey ferment. I have had a little thin honey collect upon the surface of a barrel, but it would soon evaporate. My only method of curing is to run the honey directly into half barrels, leaving the bung out for several weeks. The barrels stand on end and the bung is in the end. This gives quite a surface for evaporating any thin honey that may rise on top. But it seldom rises. The beekeeper should watch the conditions of the weather. If it is wet and the honey is thin, more care is required in selecting combs for extracting, and they should be nearly, if not quite capped; while in a moderately dry time, honey can be extracted when capped but very little. Gauge your extracting by experience and you will have no fermented or sour honey.

2. Not having experience I don't know. I think if there were signs of fermenting, heat would stop it. The fermentation, however, should not go too far.

3 The flavor would certainly be destroyed and the color changed to a dark hue.

4. Candied honey should be liquefied gradually. Put the vessel of honey in a vessel of warm water and set back upon the reservoir, as over an oil stove, where the temperature can be kept uniform and just warm enough to melt gradually and the flavor will not be injured. The flavor, however, will not in a majority of cases be injured if warmed up rapidly, if it does not reach the boiling point. Frequent warming of the same honey will perceptibly destroy the flavor.

Beekeepers should educate the people to purchase extracted honey in the candied form; then there would be but little necessity of so much warming up. When I first sold extracted honey every pound had to be liquefied, but now I sell in the candied form, the purchasers, in many cases, preferring to eat it in that condition.

ANSWERS BY C. W. DAYTON.

1. Commence where the honey is one-half capped and leave off where it is all capped. There is a great difference in honey, though it be partly capped; some is so thin as to run from the combs easily, while for other honey we have to turn the extractor long and vigorously.

2. Often in my locality we get some honey from black locust and honey dew just before our regular white honey harvest; in which case, every

comb needs to go through the extractor, and back into the hives again. The honey is always thin and unripe, and is stored in tin cans 28 inches deep and 17 inches in diameter. In such open-top cans and in an airy place it always becomes cured. If it should begin to ferment, I would dip the fermenting portion from the top and place it in a broad and shallow pan in a dry and airy place. If this failed, it is only fit for vinegar, though it might be thickened by boiling. After testing artificial plan of evaporation, I have concluded that the bees can cure honey cheaper than any one else.

3. Heating honey to a temperature, even if it is not very high, destroys that exquisite flavor that makes it delightful above other sweets. Extracting before it is ripe has the same effect. There seems to be a flavor imparted to honey at about the time it is sealed, that actually appears to be made by the bees. Heating honey darkens the color also.

4. To liquefy candied honey that it may have the flavor it had in the hive and sealed, is a pretty hard task to perform, as we cannot get the real flavor of honey to perfection outside of comb honey. However, I would prefer to liquefy candied honey by the heat of the sun; next, I would surround the honey with hot water. While the last method would be sure to detract some of its flavor, the first would not be enough to be very noticeable. While we may not be able to produce extracted honey having as delicate and fine a flavor as comb honey, we may rely on producing extracted at eight cents, when comb sells at twelve and one-half, as something else besides flavor is required.

ARTIFICIAL INCREASE.

1. When desirable to increase the colonies in the apiary, what method do you practise?

2. How do you manage with after-swarms?

3. Is there any practical method for preventing swarming? What is the best plan for the novice to adopt?

ANSWERS BY J. E. POND.

1. I allow no natural swarms, and have for years practised the so-called "artificial swarming" method. I form nuclei early in the season, by taking a frame of brood from each of such colonies as can spare them, and give to each nucleus a young queen or a ripe queen cell. These nuclei can be built up easily to strong colonies by giving them more frames of brood when needed. A full strong colony can and does rear far more brood, or gather a much larger amount of honey than a weak one, and by this method the strong colonies keep the weak ones in force, and by so doing after-swarming is prevented, and the largest amount of stores and new colonies (when desired) are obtained; to get the *best* yield of honey however, the smallest possible increase of colonies should only be allowed.

2. I do not allow any after-swarms, and by using the method mentioned in answer to question number one, I find no difficulty in preventing them. In case, however, any should come out, I should remove all queen cells from the parent hive and return the swarm at once, and give plenty of room.

3. There is no practical method that is worthy of the name. "Circumstances alter cases" most decidedly in bee-matters, and the rule for one locality would probably fail in some other. The nucleus plan of making increase mentioned in answer one will probably be the easiest and most simple plan for the novice to follow. Experts fail, however, in their attempts in this direction, and the novice must not expect to do better than they.

It would require a long article to give a practical answer to this question, as it demands a full knowledge of apiculture in all its ramifications to produce the best results. The novice had better go slow and be guided by the experience of the best writers both of text books, and articles in our journals, more particularly in the "Apiculturist."

ANSWERS BY A. E. MANUM.

1 and 2. I usually allow the bees to swarm naturally once and prevent all second swarms by removing all but one queen cell the fourth day after the swarm has issued, and then again in four or five days, though perhaps one per cent will follow the young queen when she goes to mate. In such a case they are returned, when they seldom attempt to swarm again if a card of eggs and larva is given them.

3. I think there is a practical method to prevent swarming, though it cannot be successfully practised except by a practical apiarist, a detailed description of which would be too long

for this article. I would by all means advise the novice to allow natural swarming.

ANSWERS BY REV. D. D. MARSH.

My bees are in the midst of pear and apple trees, and when a new swarm comes and it generally clusters up some distance from the ground, I have a twenty-foot ladder, and a hiving-box on the end of a fifteen foot pole, and they always fetch them.

My hiving-box is eighteen inches long, and eight inches square on the end, made of thin one-eighth inch stock, and the end of the pole goes through the centre of the side of the box, coming through the centre of the opposite side.

One end of the box is open and the other end covered, and three-fourths inch holes are bored in all the sides to let in the air, and to permit the bees shaken on to the outside of the box to crawl inside. After the cluster has nearly formed, I hold the open end of the box under it, and shake the limb on which the cluster hangs, with another pole having a hook on its end. In a few minutes I have all the bees in the box, or on the outside of it, and can then bring them down.

The box being long, and rather small in end measurement, makes it easy to work it among close branches. I keep my hives in a cool cellar kitchen, so that when the heated cluster is shaken down before the new hive just brought out for their use, they find a refreshing home. I have never had a swarm forsake its hive, and I put in no brood to tempt them to stay. Of course, if a swarm clusters on the trunk of a tree, it has to be brushed off by the panful with a wing or feather. But with this hiving-box no limb need be cut off; they can be set aside in the shade, if the hive is not ready; you can usually see the queen among the bees spread over the large surface of the inside of the box. I like this method of hiving new swarms very much.

ITEMS OF INTEREST.

DIFFERENT STRAINS OF ITALIANS.

Many of our customers call for large yellow queens and those that will produce beautiful light-colored worker progeny. Now, friends, we can furnish such queens and they will produce the beautiful bees, but they are not the bees having real business qualities, though, no doubt, in most cases they will give satisfaction. Our dark strains will do much better, and are the bees we would advise our friends to order. They are as pure as the lighter strains and superior in every point. The light yellow bees are not as hardy and do not winter as well as the darker varieties.

ALBINO BEES.

This race, or rather strain of bees, has been thoroughly tested in the "Apiculturist" apiaries. The bees are worthless as honey-gatherers or for any use whatever in the apiary. Their good points are beauty and gentleness. If any one wants bees to look at or to play with, purchase Albinos.

The beauty of these bees is produced by in-breeding, and is a process condemned by every practical beekeeper.

HIVING BEES.

When a swarm has issued, hiving should not be attempted until the bees have clustered and become quiet. Then, unless they have settled in a convenient place, easy of access, sprinkling with cold water is advisable. Have at hand a basket with a wide open top, hold it directly under the bees and give the limb a sudden jar so as to dislodge the bees and make them fall into the basket. Set the hive the bees are to occupy on the ground, and empty the contents of the basket directly in front of it. In a few moments they will all run in; then place the hive on the stand it is to occupy.

HOW TO USE THE DRONE AND QUEEN TRAP.

If you have an idea that Alley's drone and queen trap is not a time-

and labor-saving device, send sixty-five cents and get one by return mail and try it. Place it at the entrance of a hive that will soon swarm, and when the bees come out you will be well pleased with the result. While the bees are in the air, in search of their queen, just move the parent-stock aside and put the new hive in its place, and you will soon have the pleasure of witnessing a swarm of bees hive themselves. When they enter the new hive, release the queen from the trap and the work is done. If the trap does not work as described, send and get the money paid for it.

—Hives should be placed from six to ten inches above the ground in summer, and not less than two feet above in winter.

—A large colony of bees removed and transported a long distance should be placed on the ground when first opened. The bees will rush out pell-mell and many of them cannot fly as they are weakened or slightly injured while confined, but if the hive is on the ground they will all return after a while.

A correct record should be kept of the age of every queen. When a queen has done two years' service she should be superseded by a young and vigorous one.

SPECIAL NOTICES.

Our price list may be found on the last advertising pages of this number of the "Api."

All of our supplies are made from the best material and by competent workmen.

Our new queen-nursery should be in the hands of every beekeeper who has a desire to study and experiment with bees. It has twenty-four cages which may be used for introducing or for shipping queens, as well as for nursing cages. Sent by mail for $2.00.

THE BAY STATE REVERSIBLE HIVE AND SECTION CASE.

We were surprised at the number of orders received for this hive, as we were not prepared for quite so much business in this line.

However, all orders for them were promptly filled. Having made arrangements with W. T. Falconer of Jamestown, N. Y., to manufacture these hives we shall in future be ready to fill orders for them promptly.

The fact that this hive has every good feature claimed for any hive, as well as being invertible, makes it the most popular new hive offered for sale.

QUEENS, BEES AND NUCLEI.

Attention is called to the price list of bees and queens for sale at the office of the "Apiculturist." We are now ready to fill orders for Italian and Syrian queens and their crosses.

Our select queens will give satisfaction in every case, and every queen of any grade, that does not we guarantee to replace. When fall comes, it will not be our fault if there is a dissatisfied customer on our list.

"A YEAR AMONG THE BEES" is the title of a new book on bee culture just issued from the office of Thos. G. Newman & Son, 925 West Madison St., Chicago, Ill. The author is C. C. Miller, M.D. We have no time now to read the work, consequently can give no opinion regarding its value. By and by we will look it over, and if anything new about bees is found we will so report later on.

FOR SALE.—A few bushels of Silver Hull buckwheat for sale at 80 cents per bushel, delivered at express or freight office at Wenham.

—There is a growing demand for unfertile queens. We can supply them and guarantee safe arrival by mail for 50 cents each. This is one of the best methods for infusing new blood into the apiary. No one will have the least trouble in introducing such queens safely if the directions given in the May number are followed.

—We have a fine lot of Bingham and Hetherington uncapping knives. See price list.

—Any one in need of a few cases of the "Falcon" combined section and shipping crates can obtain them at this office. We also have two of Stanley's honey extractors for sale at prices much less than the first cost. They are adapted to four combs at one time.

If you have not seen and examined the Bay State reversible hive and reversible section case, you will be surprised at its simplicity and neatness. See advertisement on another page.

LETTER BOX.

Newburg, N. Y.

I must congratulate you on the increasing value of the "Api", especially the March number. It is the experience of honest, practical beemen that is of use to the general beekeeper.

F. A. MONES.

Leitersburg, Md.

Please answer the following questions in regard to the use of the drone and queen trap.

1. When should it be placed on the hive?

2. Would it be advisable to kill all the drones caught?

I want the trap more especially to keep my bees from going off.

Linna Bell.

ANSWERS BY OLD BEEKEEPER.

1. Place the trap on the hive about the time a swarm is expected, or, perhaps it would be better to do so three or four days before the colony swarms as it would avoid confusion at swarming time. In case a colony swarms it is an easy matter to hive them. As soon as the bees have left the parent hive, just remove it one side or back several feet and place the new hive on the old stand. As soon as the bees miss their queen, they will return to the old location and enter the new hive, when the queen may be allowed to run in with the bees.

While you use the trap no swarm can decamp to the woods, and no climbing will have to be done to save the bees at swarming time. We think you will find keeping bees much lighter and easier work by using the trap.

2. It is not advisable to kill *all* the drones in the apiary, though you would have to make no special effort to kill any when the trap is used, as all the drones entrapped die soon after entering it. The trap should be used to destroy surplus and useless drones.

NEW OBSERVATIONS OF THE NATURAL HISTORY OF BEES.

BY FRANCIS HUBER.

(Continued from p. 87, Vol. IV.)

You have had the fortune to observe the small queens mentioned by the Abbé Needham, but which he next saw. It will be of great importance to dissect them for the purpose of finding their ovaries. When Mr. Riem informed me that he had

confined three hundred workers along with a comb containing no eggs, and afterward found hundreds in it, I strongly recommended that he should dissect the workers. He did so; and informed me that eggs were discovered in three.

Probably without being aware of it he has dissected small queens. As small drones exist, it is not surprising if small queens are produced also and undoubtedly by the same external causes.

It is of much consequence to be intimately acquainted with this species of queens, for they may have great influence on different experiments, and may embarrass the observer; we should ascertain whether they inhabit pyramidal cells smaller than the common or hexagonal ones.

Mr. Schirach's famous experiment on the supposed conversion of a common worm into a royal one cannot be too often repeated, though the Lusatian observers already have done so frequently. I am anxious to learn whether, as the discoverer maintains, the experiment will succeed only with worms three or four days old, and never with simple eggs.

The Lusatian observers, and the naturalists of the Palatinate affirm, that where common bees are confined with combs absolutely void of eggs, they then lay none but those of drones. Thus there may be small queens producing the eggs of males only, for it is evident they must have produced those supposed to come from workers.

But how is it possible to conceive that their ovaries contain male eggs alone?

According to Mr. DeRéaumur the life of chrysalides may be prolonged by keeping them in a low temperature, such as that of an ice-house.

The same experiment should be made on the eggs of a queen; and on the nymphs of drones and workers.

Another interesting experiment would be removing all the combs composed by the common cells, and leaving none but those destined for the larvæ of males.

By this means we should learn whether the eggs of common worms, laid by the queen in the large cells, will produce large workers. It is very probable, however, that deprivation of the common cells might discourage the bees, because they require them for their honey and wax.

Nevertheless, it is likely, that by taking away only a part of them the workers may be forced to lay common eggs, in the cells of drones.

I should also wish to have the young larva gently removed from the royal cell, and deposited at the bottom of a common one, along with some of the royal food.

As the figure of hives has much influence on the respective disposition of the combs, it would be a satisfactory experiment greatly to diversity their shape and internal dimensions.

Nothing could be better adapted to instruct us how bees can regulate and apply their labors to existing circumstances. This may enable us to discover particular facts which we cannot foresee.

The royal eggs, and those producing drones, have not yet been carefully compared with the eggs from which workers proceed. But it ought to be done, that we may ascertain whether these different eggs have secret distinctive characteristics.

The food supplied by the workers to the royal worm is not the same with that given to the common worm.

Could we not endeavor with the point of a pencil to remove a little of the royal food, and give it to a common worm deposited in a cell of the largest dimensions? I have seen common cells hanging almost vertically, where the queen has laid; and these I should prefer for such an experiment.

The American Apiculturist.

A Journal devoted to practical Beekeeping.

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Any yearly subscriber is entitled to one of our selected queens anytime between June 1 and Oct. 1, by remitting 50 cts.

Address all communications, AMERICAN APICULTURIST, Wenham, Mass

For the American Apiculturist.

COMB HONEY.

METHOD NUMBER SIX.

R. L. TAYLOR.

PLENTY OF STORES, VIGOROUS QUEENS, SPREADING BROOD, ETC., ETC.

It is to be presumed that every one who enters upon beekeeping in any of its branches is possessed of bees and of a range that will supply proper pasturage.

The next thing and the most important of all, in order to success in the production of comb honey, is to secure a crowded population in each colony at the opening of the surplus honey season, with colonies populous enough at the right time. Only the grossest neglect can ordinarily prevent the securing of an abundant crop. To attain this condition, attention must be carefully given to the following particulars. First: the bees must have been wintered well. In wintering, let every one pursue the course in which he has had the greatest success; but let him be sure that each colony has not only sufficient good stores, but enough and more than enough. I believe more colonies are destroyed or rendered worthless by starvation or semi-starvation during winter and spring than from any other cause. Second: each colony must have a vigorous queen. A queen is at her best in her second year and there are only exceptional ones that can be profitably kept beyond that age; and I have no doubt it would pay well to remove a large proportion of them at the age of one and a half years. I find in my own experience that the bees themselves supersede queens declining in vigor promptly in exceptional cases only; the apiarist must do the work, or else be content with having a considerable percentage of his colonies worthless, so far as surplus comb honey is concerned.

Third: we must consider spring management. Spring protection is valuable and I have no doubt that "spreading the brood" may sometimes be indulged in profitably; but I do not wish to emphasize these points here, for I would put all the stress possible under this head upon the absolute necessity of having continually an abundance of stores convenient to the brood nest. To secure this is better than to furnish protection: it is protection and much more. It is preferable to the "spreading of brood:" it is a substitute for that and better. President Wilder, when asked to state the three most important things necessary to be done to se-

cure a good crop of strawberries, replied: First, give them plenty of water; secondly, give them more water; thirdly, give them still more water. A bountiful supply of proper stores in the spring has due effect on a colony of bees corresponding to that of an abundance of water on strawberries. Give such a supply of stores and a vigorous queen to a good colony well wintered and there need be no further concern about its getting ready to take advantage of the white clover as soon as it appears. Now have the surplus receptacles in place on the hives as soon as the bees begin to work on the flowers which furnish the surplus, and your reward is sure unless the flowers fail to yield nectar.

The next point that claims attention is the best management during the surplus season. I would advise every one to use the surplus case that pleases him best, for then my advice will be pretty generally followed. I use both those with and those without separators and like both kinds. At present I am inclined to favor the case holding single tier wide frames with separators. A case should never hold but a single tier of sections, and should set square upon the top of the hive with no outside shell or hive to interfere with the rapid handling of the cases. Give the bees additional room as fast as required by tiering up. To a very strong colony give a second case as soon as it gets well started in the first one; let a colony of moderate strength have a second when the first is about half full and allow a weak colony nearly to finish the first before giving another. Always raise the first case and put the second under it (except it may be near the end of the season), and in like manner give a third and fourth case as needed; but, toward the close of the season for surplus, be cautious that you do not give so much room as to have too large a proportion of unfinished sections. Do not be in great haste to remove the honey, though the sections are finished. Never try to take sections one by one from the case on the hive; always wait till you can remove the entire case at once. It will improve the quality of the honey more than it will injure its color to leave it on the hive as long as convenient. I would aim, however, to remove most of the honey just before the close of the season so as to avoid trouble from robber bees. The color of the honey will be but very little affected if the tiering-up plan be pursued.

I clip my queens, and when swarming begins I hive the swarm, (after Heddon,) on the old stand, remove the cases from the old hive to the new and from the old hives whence swarms issue earliest, I would select those containing bees having the most desirable qualities and divide them into nuclei to utilize their cells for the production and fertilization of queens to be used in replacing old and undesirable queens that issue later.

I advocate and practise contracting the brood-chamber to the capacity of about five L frames, and either fill the frames with foundation or use frames with only starters of foundation. For contraction I esteem a hive divided horizontally very much preferable. Such a hive is much handier in every way and is especially desirable because the bees, occupying the whole of the space beneath the section case, work in all parts of it more equally and satisfactorily. I use foundation of full size in the sections. I fasten the foundation, into the sections with a machine invented by my assistant, Mr. Millen. In working it, one foot gives the proper amount of

pressure and on the instant the other foot pushes the section out rubbing in the wax. It is superior to anything I know of.

If these directions have been properly followed, at the end of the season of clover and basswood, if there has been a good flow of nectar, our hives will be found loaded with a heavy crop of comb honey, the choicest possible at that time of the year; but we are now only in the position of the farmer when he enters his meadows with the mowing machine: our crop is still to be cured, only we have this advantage; that we may, if we will, cure our product with certainty and under cover. Our honey is produced to sell, and to sell well it must be palatable. Honey not cured or cured improperly is a poor thing with which to tempt the appetite. Purchasers cannot distinguish the good from the poor at sight, so one purchase of the poor prevents a dozen sales of the good. Poor honey is the bane of our markets. When all honey is thoroughly cured it will all be taken with avidity. It would then be a real luxury and would be irresistible. Purchasers would not be able to get enough. How should honey be cured? Stack it up in the cases as they come from the hive in such a manner that the air can circulate through it freely, in a well built, thoroughly dry, room with a stove in it; do not rely on the heat of the sun to do the work. A fire will be needed only occasionally during the warm weather; but as cold weather approaches, keep the room dry and warm by more frequent fires and in November you will have honey that can be shipped anywhere without breakage or leakage. It will be hard to tear it out of the sections and yet consumers will work eagerly to get it out.

I consider this matter at present the weak point in comb-honey business. However it may be in some other things, in this we help ourselves in helping others. Let there be a move forward in this direction.

Lapeer, Mich.

[The above was not received in time for the June number, so space is made for it in this issue.]

For the American Apiculturist.

WORKING FOR EXTRACTED HONEY.

Willimantic, Conn., Jan. 2, 1887.

EDITOR AMERICAN APICULTURIST:

In your last issue of the "Api" I saw a letter from Mr. G. M. Doolittle who says "when swarming time arrives I simply exchange the brood in the hive from which the swarm issues for empty frames or frames of foundation (generally the former; the plan is known as the Hutchinson plan although it originated with me) while the swarm is in the air and hive them on the returning plan." What I would like to know is, what does Mr. Doolittle do with the parent stock; also what is done with the new swarm?

I am not at all acquainted with what is called the "Hutchinson plan." I have often read of it.

Yours truly,

A. T. TROWBRIDGE.

REPLY BY G. M. DOOLITTLE.

JUST at the present time there seems to be a "craze" among bee-keepers on the subject of comb-honey production, many who have heretofore worked almost exclusively for extracted honey changing their tactics and are now advocating and talking comb honey to the exclusion of that which they formerly endorsed. I fear this is not a wise policy, for it can only result in soon lowering the price of comb honey and advancing the price of extracted, this causing an expensive changing of fixtures the second time. It seems to me that the well-balanced apiarist should produce both comb and

extracted honey, and as he sees the tide swaying toward the side of the one he should go a little heavier in the opposite direction, but not enough as to throw aside all his fixtures along the line the tide is moving. We have many farmers in this locality who when mutton and wool are low sell out their sheep for a song and go into the so-seeming, more profitable business of beef and butter, paying a high price for cows in high tide, for everything in the cattle line. In a few years times change, and cattle are at low tide; beef and butter are sold for a song, while mutton and wool are now bringing a good price again. These farmers now for a second time become discontented and change their cows for sheep, only at a great loss again. So they keep on doing in a sort of will-o'-the-wisp chase losing money at every change. Others keep both sheep and cows, never running out of either, but in time of good prices with the flock raise a little more from the sheep, and these again increase the herd when high prices are paid for the production along that line. In this way a steady growth is maintained, while by the other plan a downward tendency is a sure result.

As I have worked for years for both comb and extracted honey and believing that the present time is favorable to the production of more extracted honey and best comb, perhaps I cannot do better than to tell the readers of the AMERICAN APICULTURIST how I proceed to accomplish what seems to me to be the best results. The first thing necessary in the successful production of extracted honey is a good queen to produce hosts of workers to gather the harvest. In fact, whether all realize it or not, the whole of bee-keeping centres in the queen. Without the queen it would be impossible to produce a pound of extracted honey, hence it becomes apparent that the better the queen is the more honey we obtain. When all come to realize the great value of really good queens we shall have taken a long stride toward successful honey production. But good queens are only of value when we surround them with favorable circumstances, thus getting large numbers of eggs laid at the right time and causing each egg to be nourished to a perfect bee, so that we can have the bees in our colonies by the tens of thousands at the right time. Failing in this, the flowers will bloom in vain as far as filling our surplus combs with honey ready for the extractor, is concerned.

But "what are favorable circumstances" is asked, to which I reply, an abundance of food and warmth. The abundance of food is quite easily secured in this day of bee feeders, and especially so, if the apiarist has set aside the previous season, as he should, combs solid with honey which are ready to be set in the hive at any time. But the warmth is not so easily secured, especially when our honey harvest comes early from white clover which requires the getting of a large quantity of eggs laid early in the season in order to have the bees in time. Several years ago I tried artificial heat to help forward things, but after numerous experiments which resulted only in harm I gave it up.

About this time (1878, I think it was) J. H. Townley, a then noted beekeeper of Michigan, came out with his chaff packing, claiming that there was heat enough generated by an ordinary colony of bees to promote safe, early breeding if said heat was not lost by radiation. He claimed,

if I remember rightly, that this chaff packing answered the same purpose to the bees which bed quilts and coverlids do to a man, in which case if a man is "covered up warm enough," as the expression goes, he would be as warm in a zero temperature as in June. This looked reasonable to me and after that I set my bees when taken from the cellar into chaff hives or rough boxes filled in with chaff, sawdust or cut straw, always contracting the hives with chaff division-boards, quilts, etc., to suit the size of the colony. In this way colonies of bees would go right on breeding through cold days and nights, keeping warm and nice till the combs would be full of brood down at the bottom corners, while those not protected would be clustered closely to keep warm with very little brood. I here give credit to Mr. Townley for this plan and think all using it should be willing to do the same.

As soon as all the combs are filled with brood which were first given them more are added till the hive is full of comb and brood. In adding these combs, I prefer to add two at a time, using one which is empty and one filled with honey such as spoken of above. The empty one is placed at the outside and the full one in the centre. Before putting in the full one I break the cappings of the cells by passing a knife over it flatwise, for by this means the bees are obliged to remove the honey, and in doing so are stimulated to apparently greater activity than by any plan of feeding with which I am acquainted. As the honey is removed over to the outside empty comb, the queen fills the emptied comb with eggs which when hatched into larva require the honey brought back by the nurse bees to feed said larva, and as the honey is now being carried again, activity is still kept up and the queen now goes over and fills this comb with eggs also. In this way one hive is soon filled with eggs, brood and bees just in time for the harvest.

Having the hive filled as spoken of, and the honey harvest at hand or just commenced, if we wish no increase from our bees, no time is to be lost in putting on the surplus arrangement, otherwise the bees becoming crowded may get the swarming fever. For extracting, I prefer another hive of the size of the first, but some prefer one of only one-half the depth. As to results there is probably no great difference, but I consider it quite an object to have all hives and frames alike in the apiary. In putting on this surplus arrangement I prefer to use empty combs, if possible, instead of comb foundation. I also prefer to use two large or wide dummies, one at each side, for a few days, so that one-half of the room is taken up which leads the bees along gradually instead of thrusting a large amount of surplus room upon them at once. From experience I believe them less liable to swarm where this course is taken, for they seem to bend every energy to fill this small, additional room, while, where a large amount is given at once, they are injured should it become cool; or, if warm, they swarm from being loath to enter it. As soon as the half of the hive given them is partly filled with honey, the dummies are taken out, the combs spread apart and frames filled with foundation put between them. At this stage I would just as soon have foundation as empty comb, for the bees are now ready to work upon it, while before they were not. The time for taking out the dummies is when you see the cells being lengthened out with new comb along the tops of the combs.

How you will proceed in the future depends upon whether you wish your honey all ripened in the hive till the harvest is over, or ripened in a warm room by evaporation. Sometimes I think that honey left on the hive through the season is of a better quality than that extracted every week or so; then again I am not so sure about it. Of one thing I am certain, more honey can be secured with less hives and fixtures where it is extracted when the bees first begin to seal it, than can be gotten by the other method.

As to the labor there is little difference, except that when we extract often the labor comes at a time of year when we are the most crowded. To be sure the operation is gone through with oftener, but to offset this there is little or no uncapping to be done, while the honey leaves the comb more clean with less than one-half the labor in turning the extractor. If the season is warm and dry, I would just as soon have honey extracted as above as that left on the hive the season through, but if cool and damp I prefer it ripened all that is possible by the bees, and even then it is not as good as the other. In my opinion the season has more to do with the quality of the honey than the process of ripening. If we decide to extract oftener, the hive we have already added (if both contain two thousand or more cubic inches) is probably all the room the bees will need, but if left on during the season, one more and probably two will be needed. In putting on the third story I do not use the dummies, for by this time the weather has got so warm and the bees so numerous that they will spread out so as to occupy the whole of the extra hive. This hive should be put on when the bees have the combs in the second story sealed along the tops of the frames, or soon after you would commence extracting if working the other way. Many say raise up the second story and place this third hive between the two; but after repeated trials of both I prefer placing it on top, for I think the bees will occupy it just as quickly if the honey flow continues, while if it from any cause should be cut off at this time or soon after, we are in much better shape in not having the honey scattered through the three hives with few if any combs full. If a fourth story is needed, put on the same as the third, when after the season is over you will begin to carry the honey to the honey house and extract.

To get the honey off I find it is the best way to go to a hive and blow a perfect deluge of smoke down on the bees from the top of the combs, and as soon as the bees have run below take off that story and set it on your wheelbarrow or honey cart, not attempting to get more than one story from one hive at the same time; for, if we do, the bees will return to the next story before you can get it off, when smoke is of little use to drive them. Before extracting save plenty of good, full combs for wintering and spring feeding. If the weather is cool, when you wish to extract, place the combs of honey in a small room for three or four hours previous, in which the temperature is kept as warm as 100°, when you can take them out as you wish to uncap and extract them, doing this work as easily as on a hot day in July or August.

In the above I have given a brief outline of how I work for extracted honey, and as a proof that it is an average plan at least, will say that I have taken as high as 566 pounds of honey from a single colony in one season.

In conclusion I will say that

the getting of multitudes of bees, just at the right time, has more to do with the successful working for honey than anything else, and when all realize this and work for the same to the fullest extent, one-half of the colonies will gather as much surplus as the whole do under one present management.

Borodino, N. Y.

For the American Apiculturist.

NUMBER SIX OF THIS YEAR.

J. M. SHUCK.

THE June, 1887, "APICULTURIST" is worth a great deal to the practical producer of honey. If 50,000 intelligent beekeepers would read this number the honey crop of the United States, the season being favorable, would be twenty-five per cent larger by the reading and consequent practice than it would without it.

The series of articles starts out with Doolittle (what a misnomer! it ought to be Do(o)much) at the head. Some men are born to lead. If you would put Doolittle with his burly form, his accurate, never failing mental vision far in the background, the natural sweet fermentation and agitation of human thought would work and push him to the fore. The writings of Doolittle are simply monumental as to the vastness of their truths and the lilliputs of their errors. What a volume they would make and how well they could be relied upon by those who desire to learn and never unlearn.

Then follows Doctor Tinker who makes the nicest sections in the world and who prides himself on his nice, accurate-working machinery, "if he don't make a cent." If rightly informed, the doctor is not such a noted producer of honey as some, but if his experiments in the production of honey are conducted upon the same careful, painstaking basis, as are those he employs in the manufacture of hives, sections, etc., his conclusions must be valuable. One item of interest in the doctor's article will attract attention and that is, that "inverting the brood-nest has come to stay." The doctor has not always believed this. We are thankful to the doctor for this; it is always a pleasure to see a good man also right, and aside from the doctor's article in question he is right in another thing: he *hates* "cheap John" goods in our line as the devil hates holy water. He doesn't make anything merely to sell, he makes things to be used, so that he who buys gets the worth of his money.

Next in the list comes A. E. Manum. It is a nine days' wonder how this beekeeper was gotten into the public view. He has been so busy for *years* taking honey, "dead loads of it," that no one supposed he could be induced to tell about it. He still sticks to separators, clips his queens' wings and jumps his rows of sections to insure even work in the cases and uniform color as to the combs. Mr. Manum gives much of the detail of his practice, but the article is so cut off here and there and elsewhere, that it shows in the plainest manner possible that he has not begun to tell what he knows about getting comb honey. Everybody should read Mr. Manum's article.

Next comes Dr. Miller who apparently looks over the field, takes in a long breath and says, "I have just told all about this thing in a book and what more

shall I say now?" so he goes on in a pleasant way and works a large number of very useful hints into a short article. The doctor's chatty style is agreeable and works instruction in a charming way. He has probably been a teacher in his younger days; he is, to say the least, one now.

Next comes Brother Demaree from Kentucky, the only representative in this series from the "Sunny South." It is noticed that he makes a point on *locality*, as affecting different operations in the production of honey. This word is more and more used in our literature from day to day, and it may be remarked that we can never have a manual of general instruction in beekeeping and honey-getting until we get the results from experiments conducted at two or three apicultural stations in each state and territory in our Union. Many of the disappointments in beekeeping arise from the attempt to make a plan which succeeds in Maine apply in California or somewhere else, when the conditions surrounding the two cases may not at all be similar. Mr. Demaree is a veteran of about forty years in beekeeping, and his work has probably been largely devoted to investigation and experiment, and his suggestions are entitled to great respect.

Taken all in all, these five articles are a remarkable collection to find in one single number of any bee paper, and they ought to go far to the establishment of the "APICULTURIST" upon a permanent basis, if it has not already attained the desired goal.

Des Moines, Ia., May 31, 1887.

For the American Apiculturist.

MANIPULATION OF BEES, ETC.

G. W. DEMAREE.

THE beginner must learn to handle his bees, so as to learn practically the natural history and habits of bees and to learn to know just what goes on inside of the hive, after which a practised eye will tell at a glance when anything is wrong with a colony from external "signs." After the deep snow we had the latter part of March (which by reason of its depth lay for several days), when the weather cleared up and the bees were able to stir, I discovered by walking through the apiary about ten colonies, one of the best in the apiary among them that had "balled" and killed their queens during the bad spell of weather.

They do not often go so far in their desperation as this, but they did it for me this time. Part of these colonies were saved by making them rear queens and helping them with some capped brood. They will not be in time to do much this season. I have found that it pays to give bees plenty of stores in the fall, so that they need not be disturbed in the early spring till fruit bloom comes, after which there is no danger in handling bees. Last season (1886) in March, after going through my bees to give them a "looking over" and providing for those colonies that might need assistance, I had occasion to return to one colony that had been examined, and when I opened the hive I found the queen "balled." I performed whatever I had reopened the hive for, smoked the bees off of the queen, closed the hive and went my way, but that hive turned up queenless afterwards. I now make it a rule that when I find a

"laying queen balled" I cage her till the bees give up their evil intentions on her life. By these proceedings I have found to my satisfaction that the fault of "balling" is most generally "pure cursedness" on the part of the worker bees.

By close observation in connection with this curious and serious freak of bees destroying their queens in the early spring, I find the main cause to be discouragement. I rarely ever see it occur if the colonies are fairly populous and have plenty of stores, hence the remedy is to provide the bees with an abundance of stores if you must keep less of them.

I have found that the advice of the standard books on bee culture are misleading when they advise building up weak colonies by drawing brood from the stronger ones. It pays me best to depend on the strong colonies for surplus, and leave the weak colonies to build up themselves if they get no surplus at all.

Well, what I wanted to say most in this connection is, after one has learned the internal working of the bee hive and gained sufficient knowledge of external appearances, it is a waste of time and labor to open hives often. The hives should be so arranged as to be susceptible of manipulation without going into the brood department except when absolutely necessary. In an apiary located in a public place like my own, where many persons visit it as sight-seers, it pays me to keep a hive or two, in proper condition for rapid and easy manipulation, that the queen can be exhibited readily, the brood and drones, workers pointed out, etc. One or two hives can be made to pay in this way in a large apiary. I use them to draw brood from, using the purest stock in the apiary for the purpose, as we like to "show" our best stock, and such bees make the best of nuclei and work well anywhere.

The swarming season is late here this spring; I had but one swarm in May. The weather has been too fitful for swarming up to this date (June 4). I have found a shorter way to prevent after swarms than the plans I have heretofore practised. Instead of delaying as heretofore, I now succeed by moving the hive from which the swarm issues immediately to a new location, and this saves time and "fuss." When a swarm issues, an empty hive is set by the side of the "old hive," and the combs are all lifted out and the few bees that are left are shaken off into the "old hive" and are placed in the new hive. If I have young queens one is run into the new hive, after destroying all queen cells; if not, one good cell is left and the balance destroyed. The now empty "old hive" is filled with empty combs or frames filled with foundation. A queen excluder is put on, and on this is placed plenty of surplus room including the case or cases that were on the hive when the swarm issued. The new hive, with its contents, is now moved to a new location in the apiary, and the swarm is hived in the "old hive" on the old stand. Not one time in a dozen will a second swarm issue under this management, and "never a one" if a young queen is given immediately.

Hiving swarms in hives that have just cast prime swarms, as suggested by brother Alley, "is not new." Several persons have spoken of the plan heretofore, and I have tried it without satisfactory result. In our great swarming season (1883) I tried it on a large scale, and it did not work satisfactorily. It seems to place the bees in *too* much the same conditions

from which they had swarmed to escape. Some swarms, if the queens were old, would start queen cells and swarm again in five or six days. Others would "sulk" and do but little good, while a few would light out for the woods in high disgust; others would do very well. I hope the plan will be tested, thoroughly tested under the experienced eye of brother Alley, and we shall be favored with a report.

Christiansburg, Ky.

For the American Apiculturist.

BLACK BEES FROM PURE ITALIANS.

A. L. SWINSON.

In the API, page 115, Mr. Pond, (J. E.) takes Dr. Tinker to task for asserting that black bees may be produced of pure Italians by selective breeding for that particular object, and calls on the Editor of the "API" to sustain the fact that they have reason to believe that no such demonstration can be made, as they both had directly the contrary experience. Mr. Alley did not sustain Mr. Pond's assertion, at least did not do so in connection with the aforesaid article.

In reply to Mr. Pond, I desire to say I think Dr. Tinker is perfectly correct, and my opinion is based on practical experiments all made since 1884. I think this is so with any race of bees and I have imported direct, and bred myself, the Cyprian and Syrian. I find the same rule applicable to them. On the other hand, I can take any strain of black bees and breed them up to three-banded workers. I have had two Carniolans, imported, from Benton; then I have had plenty of Germans to observe.

The queen of any race of yellow banded bees, that will produce any dark-colored QUEEN progeny, can be run into black bees, by selective breeding, and I have never found a SINGLE QUEEN of any race clear of that fault. I advanced these deductions to Dr. Tinker in the fall of 1886, and also another, that I could breed workers that were clear of all dark rings around their abdomens; leaving the color of the abdomen yellow, of various shades; and the usual rings of fuzz alone, to make up the marking of the abdomen of the workers.

Dr. Tinker replied that so far as running the yellow races into blacks, he could, or had had the same experience as myself. That in the breeding out of the black rings of bees around the abdomen of the workers, he had never thought of and could not say. Since advancing the said theory, I have practically demonstrated that it is a certain fact that it can be done. And I have done it. Now, if Mr. Pond wants to pay for workers that show no black rings around their abdomens, I will send him some and go over and select every one I can find in my apiaries. I say *my*, for I don't think any one else has such workers in America. All that is needed in this case is to show the bees. In the other case, when black bees would be produced, Mr. Pond could easily say they were not kept out of reach of black bees, and it could not be proved in hardly a single instance or case that they were.

Goldsboro, N. C.

For the American Apiculturist.

CARE NEEDED.

PROF. GEO. G. GROFF.

In the June number of the AMERICAN APICULTURIST, Mr. Corneil

complains of losses which he has sustained from following unreliable advice. Beekeepers, it would seem, are often so enthusiastic of the success of new ideas, that they publish for facts, what are only *untested theories*. We see this in the hundreds of inventions about hives and in the management of bees. The bee papers are full of untested theories, all laid down, as though proven. The losses resulting from attempts to carry out these theories must, in the aggregate, be very great. But those prone to experiment with every new idea, should remember the injunction: "Prove all things, hold fast to that which is good." Let the experiments be first tried on a small scale and later we may embark our all in them.

In a recent number of the "New York Tribune," a noted beekeeper and college professor tells how to destroy moths which may be in empty combs. If followed out, his directions are very excellent for burning down the house, if performed in-doors. They are, in short: put the combs in a box in which are live coals, on which sprinkle some sulphur. The fumes will do the work, also the flame melt and set fire to the wax and the house. A friend of mine had just such an experience this spring. I told her to dig a hole in the ground, put some coals in it, sprinkle sulphur on them, and set the hive over the hole. But to improve on my plan, she put the coals and sulphur on a flat vessel on a brick floor in the wash kitchen, and set the hive over them. The result was a narrow escape of the house.

Lewisburg, Pa.

For the American Apiculturist.

A DULL DAY IN MAY.

WEEDS.

Mrs. H. Hills.

I have often wondered how one would get through with the dull, dark days which sometimes come in this month, were it not for the weeds. One, finally, becomes tired of remaining in doors and putting up sections, even the white, delicate, pearl-like things, sent by Doctor Tinker.

We wander out and take a look at the bees, but they seem to partake of the universal dullness. Now and then one, more alert than the rest, starts out on a lonesome journey, and another comes quietly home, looking, as though after all, it were hardly worth the trouble. A few are dozing at the entrances, while now and then one comes slowly out and takes a view of the prospect, then deliberately turns back and disappears again from sight.

We ramble off, under the dull, gray sky, to where the lettuce, young onions and cabbages are congregated. We have not been here for several days, but the weeds have. Are weeds matter out of place? Some of them must feel that they somehow placed themselves in a wrong position, if they judge from the manner in which they are immediately and effectually rooted out. We are well acquainted with them all; and as we saunter on, by the palings and hedge-rows, many, which were formerly doomed to early death, are now spared. Dandelion, catnip, motherwort, mustard, jill-over-the-ground and others, so long as they do not intrude on the garden beds, are not molested. Now and then, we see a solitary bee taking his lonely dinner. On other days,

many bees visit here, and the air will be filled with their drowsy droning.

Each weed possesses its own individuality, and all soon become sentient objects to us. When we first made their acquaintance, they had become, through long and undisturbed occupation of the land, quite lords of the domain. The docks and the horseradish were rival feudal lords, occupying by right of conquest and granting what seemed meet of the common territory to lesser vassal weeds. If one of these two powerful rivals occupied more ground than the other, it was made up for by the remarkable tenacity with which the other held possession when once it had gained foothold and on account of its very unnatural and illegal methods of propagating itself.

These monarchs of the field hardly condescended to notice the insignificant efforts of one small pair of hands, attempting to disturb the foundation of their ancient rights. As hopefully might the mouse attempt to remove the mountain; but monopolies shall not always prosper. The burdocks waxed high for many seasons and annually presented their wonderful crop of bright burrs. Sometimes it seemed wicked to further attempt their demolition. The thought of other and long past dull days in childhood which had been made tolerable by these and kindred blossoms, together with a feeling of utter incapacity to cope with their remarkable growth, often discouraged from further effort. Yet, as time passed, they gradually took on a less haughty demeanor, until, finally, one began to feel a sort of pity for the baby plants which were ruthlessly cut off, and the parent plants, doomed by their nature to an early death, seemed to foresee, in the loss of these little ones, the decay of their ancient grandeur.

The day at last came when no one individual of the species could be found in all our borders. All their strength and pride had not been sufficient to withstand the inroads which were so constantly kept up by the one small pair of hands. They have taken refuge in a neighboring, unoccupied lot, from which they attempt, by all manner of devices, known only to themselves, to regain a foothold in their ancient realm. But the warfare is now insignificant and affords a pretext, on these dull days, for many a lazy, dreamy saunter, among the tangles of fences and hedge-rows.

Sheboygan Falls, Wis.

THE HONEY MARKET IN THE WEST.

G. C. STEWART.

I have sold comb honey in a town in northwestern Missouri for four years from 20 cents at first to 15 cents last year. The last sale I made there was at 13 cents, because honey had been shipped in and sold at 13 cents as California honey; but I know by the style of package it was from Iowa or Missouri but it was sold by a commission man. I know I could have obtained 15 cents for the same, and not call it by a wrong name either. Bee men, you are to blame for the low price of honey. The commission man will sell quickly if he sells for $\frac{2}{3}$ the value. Why not sell to the retailer direct? My plan is to go to the bank and get the name of the reliable dealers in good towns, from Bradstreet, then write a postal and state the quantity, quality, and price delivered in good order, guar-

antee safe arrival by freight, and trust the party for a short time for pay. I have sold to parties I have never heard of any other way. A safer way would be to have the cash, but do not think much would be sold so, for a busy dealer would not take time to find out your standing. Extracted honey I sell at home if possible. I will peddle all my honey before sending to commission men. They may do the best way they can but we are the losers. The season is discouraging; bees are light and clover dying from drought. Have hopes of a good linden flow for the trees are full of buds. The API is a fine paper. The June number is worth $5 to a practical bee owner.

Mr. W. F. Clark.—"The hive you want" would be a chaff-hive, with movable upper story, and movable bottom, I think.

Hopkins, Mo.

For the American Apiculturist.

LETTER FROM TEXAS.

MRS. SALLIE E. SHERMAN.

GLOOMY BUT BETTER PROSPECTS FOR BEEKEEPERS IN TEXAS.

The prospect for a good yield of honey in this part of Texas is indeed gloomy; though I am happy to say that our terrible drought has come to an end. We had on the 2nd inst. a glorious rain and I am in hopes that our bees will be able to gather a living. Hoarhound is in bloom now. Our only hope of surplus, if we get any, will be from fall flowers. I am just in receipt of a letter from a beekeeping friend in an adjoining county asking me if I think it would pay him to move his bees (about thirty colonies) twenty-five miles to good pasturage. I think it would, but would prefer Mr. Alley's answer to my own judgment. The drought has cut off all prospect for any surplus with him as well as myself. He has quite a lot of little ones dependent upon him for sustenance. Quite a number of persons in and about town that owned only a few colonies of bees have lost all and would now be glad to sell their empty hives for a mere pittance, and let beekeeping severely alone hereafter. Those who have never passed through such a severe drought as we have just had cannot imagine how bad, how terribly distressing, it was. Water hauling was about all that could be done. It looked like starvation staring us in the face, look which way we would. Merchants refused to credit, turned off their clerks, reshipped their goods that had been ordered and in many cases closed their doors. Stock was in danger of starvation. Horses that were worth $100.00 could not be sold for $25.00. There was no demand for cattle that had heretofore been cash in the spring. Everything in the provision line went up. Negro women were trying to hire themselves out for their food and in many instances failed. With all these discouraging things to contend with and witness, how could I write for the dear "API?" But all is changed now. We have had a good rain which made more glad hearts in Bell Co., I dare say, than ever was at one time before. Everybody you see now wears a broad smile and looks happy and all are as busy as bees.

Salado, Texas, May 5, 1887.

[I advise moving bees if by so doing, a good pasturage can be had. It is not an unusual thing for beekeepers at the north to move bees. Mr. L. C. Root, a few years ago, moved several hundred colonies a few miles, and in about two weeks he was well paid for the trouble, as by moving the bees to a new location, several tons of surplus honey were secured.

We are glad to learn that the terrible drought which has prevailed so long in Texas has been broken at last.]

For the American Apiculturist.

THE WINTER PROBLEM.

J. E. POND.

An article upon the above subject may not be considered exactly seasonable, still it is one of the greatest importance, and one to which too much thought cannot be given, and of which none too much can be written. In this article I propose to deal solely with the question as it relates to New England and its climate, but believe that whatever is applicable to a New England winter will apply equally well to any changeable climate; and I say as a matter of fact that I have solved the problem to my own satisfaction at least, and that satisfaction is owing to the fact, that during the last sixteen years, wintering on summer stands with the temperature showing from 40° *F.* above, to 20° *F.* below 0, and with from 130 to 175 days when bees could hardly fly, I have not lost a single colony that had stores enough on which to live, during the period above stated. And, further, that during that time, only two colonies were lost, and those could have been saved had not illness confined me to the house from February to June, preventing me from caring for my apiary as I should. During the whole time I have kept bees, I have experimented largely in this matter, and in the course of those experiments have used hives of all kinds, shapes, and sizes, and have found that while there is a great difference in hives in the matter of economy, there is but little in the mere matter of safe wintering. For reasons that I need not explain here, I will say incidentally, that the ten frame "L" hive is the one I prefer to all others, and is the one I recommend for that reason. I have experimented with single and double-walled hives, with chaff filling, and dead air spaces, with sides 1¼ inch to ⅝ inch thick, and I find no trouble in wintering in any of them. I do find, however, that a double-walled hive, with walls from ⅝ to ¾ inch thick, and with a dead air space of 1 to 1¼ inch, gives the best results, in the matter of economy in use of winter stores; but, even in this matter, I have not found that degree of regularity, that one would suppose should exist. The smallest amount of stores consumed in my own apiary was in the winter of 1885–86, and in a single walled ⅞ inch ten frame "L hive," the bees having free access to all the frames; the amount consumed from October 15, 1885, to Feb. 20, 1886, being 11½ lbs. and the colony came through in the best of condition, and gathered 72 lbs. of honey from apple blossoms in four days in the following May. I don't consider that there is any particular quality either in myself or in my bees, that should produce the results stated above; but I do believe that these results were brought about by the careful method of management I have adopted, and which is the same that I have made public many times during the last few years, and will be found in the "Api," with those of several others. I am forced to the conclusion that, while perhaps a little honey can be saved by "cellar wintering," take it all in all, the safest place is the summer stands; that is to say, bees will "spring" better when kept on summer stands, than when wintered inside, and as a rule will live till spring no matter how packed for winter, if they have stores where they can reach them. I am convinced, too, that chaff-hives afford no better real protection than do single walls, and that in spring they are far less safe; and then

again I am of the opinion that in many cases, chaff hives have proved an injury, for the reason that dependence has been placed on them alone, and such care as is an actual necessity has not been given for that reason. We can all remember the warm discussions that have been held in regard to the wintering qualities of deep and shallow frames, and I suppose some of the readers of the "Api" can remember the assaults that have been made upon myself because I insisted that the "L" frame was amply deep enough. Now I presume that many will differ from me in the matter of chaff protection; to all such I can only say, "I speak whereof I know." It is not guess-work nor theory; it is a matter of careful experiments and thorough tests, and I claim and make the claim boldly that, with proper preparation in the fall, better results will come in the way of early brood, and early honey-gathering, by the use of double-wall dead air space hives with sides $\frac{5}{8}$ to $\frac{3}{4}$ inch thick, than with the most approved chaff-hives ever made. The first double-walled hive I ever used was made by our Editor, and of $\frac{3}{4}$ inch stock, with an inch dead air space. This hive I have used some sixteen years; a colony has been wintered in it every winter during that time, and not only safely, but so well, that I have always found from three to five frames well filled with brood by the first of March each year.

I have not written the above in the interest of any dealer, or of any hive; but have stated these facts for the information of such readers of the "Api" as may possibly be desirous of learning the truth, and are in doubt from what they have read, whether to use single walls, or to go to the expense of procuring chaff-hives as a matter of precaution.

I could theorize upon the matter of natural law as applied to bee life, and show argumentatively why the results stated above will always follow if the same general plan is adopted; and also show in the same way, why single-walls even are better than chaff-hives. But the facts are what is wanted by the practical man; and he can theorize to suit himself. It may be asked what experience I have had. To that I will say, I have kept bees and carefully studied their habits, etc., since 1864, and during that time have kept from five to fifty colonies; that, in the course of my study and experiment, I have never hesitated to sacrifice one or a dozen colonies, if necessary, to disprove or prove and establish a a given point. Many hive dealers make the claim that only with their hive can successful wintering be fully assured. My claim is that except in an extraordinary winter bees can be kept as safely as can horses and cattle, and that too on their summer stands and in single-walled hives. I claim also, that there is no safer winter stores for bees than their own natural food, if the same be pure; that cold does not of itself kill our bees; that they will safely resist exposure of great severity and of long continuation, that the main point of protection is to prevent exposure to sudden changes in temperature, and that this can be better and more cheaply done by other means than by increasing the thickness of the walls of their habitations.

I shall be pleased to have my views discussed, and if any one can make a better practical showing than I have been able to do, I shall be pleased to learn how it is done. My position needs no argument in its support. I give the facts for what they are worth. This bridge has carried me safely all these years, and will prove equally

as safe for any and all who travel over it in the same way as I do myself. If any wish to know my plans and methods they will find them generally stated in the "API," and I shall be happy to give further information to all who apply personally or by letter.

Foxboro, Mass., June, 1887.

QUERIES.

Answers by Practical Apiarists.

BEST TIME TO INTRODUCE QUEENS.

Query No. 26. When is the best time to change or supersede old queens?

NOVICE.

ANSWER BY G. W. DEMAREE.

I prefer to change queens just at the close of the white clover harvest.

ANSWER BY DR. TINKER.

I let the bees supersede all old queens. All good queens usually remain prolific and valuable to the last.

ANSWER BY DR. C. C. MILLER.

Perhaps at or near the close of the honey harvest. Possibly, it is best to leave such matters in charge of the bees.

ANSWER BY R. L. TAYLOR.

During the swarming season and not much earlier than four weeks before the close of the white clover and basswood seasons.

ANSWER BY JAMES HEDDON.

As soon as you feel the need of such re-queening, during the months of May, June, July and August, when good queens can be produced in this latitude.

ANSWER BY H. ALLEY.

At any time when queens can be procured. I would not disturb a colony at work in the sections for the purpose of changing queens. Introduce queens at any other time when desirable.

ANSWER BY WILL. M. KELLOGG.

When there is a good honey flow, when you can leave dripping honey exposed in the apiary and bees will not take it up, queens then can be introduced by almost any method, so they know they are queenless.

ANSWER BY P. R. RUSSELL.

Well, that depends. Generally speaking, the best time is as soon as we can get ready (when the season is suitable) and young queens are to be had. Queens are more safely introduced during the honey harvest and at night fall. I am seldom obliged to supersede old queens, especially Italians, as the bees attend to that matter themselves and too often supersede them when it seems uncalled for. I have changed queens frequently while a natural swarm was being hived and always with success.

ANSWER BY J. E. POND.

I do not consider it advisable or necessary to re-queen a colony or supersede a queen, so long as the old queen is doing her duty satisfactorily, unless it be desirable to do so for the purpose of changing from one race to another; in such case it may be done at any time under proper precautions, but the novice will find it safer to make the exchange when honey is being gathered freely.

I had a queen last year in her fifth year, procured from our editor, that was to all appearances as good as ever last fall, both in strength and prolificness. She was a very light yellow Italian, *not Albino*.

QUEENS MATING.

Query No. 27. At what age do young queens usually become fertile? and after having met the drone, when do they commence to lay? QUERIST.

ANSWERS BY JAMES HEDDON.

1. From five to fifteen days.
2. From two to three days.

ANSWER BY WILL. M. KELLOGG.

Usually from five days to two weeks old, and they begin to lay within three or four days.

ANSWER BY R. L. TAYLOR.

Young queens usually become fertile when about a week old and begin to lay in about two days thereafter.

ANSWER BY DR. G. L. TINKER.

At from eight to twelve days old usually, but if the weather is too cold, as in early spring or in the fall, they often do not mate for twenty days. After meeting the drone they mostly begin to lay on the third day.

ANSWER BY DR. C. C. MILLER.

My observation does not cover the whole of this question, as I have only noticed that I find young queens laying at ten or twelve days old. The other part of the question is answered in "Alley's Handy Book" and other text books.

ANSWER BY P. R. RUSSELL.

Naturally, queens become fertile when six to eight days old and about four days thereafter will begin to lay. This is a season of peculiar peril to the young queen and colony from extraneous causes, and I have often discovered the loss of a queen by the agitated manner of the bees about the entrance at night.

ANSWERS BY J. E. POND.

1. Queens emerge from their cells about the sixteenth day from the egg, depending upon the strength of the colony and state of the weather, as to heat and cold. They usually take their wedding flight from five to ten days thereafter, though in one instance, coming under my own observation, the queen did not meet a drone till the twenty-eighth day after she left her cell.

2. They usually begin laying in a day or two (but sometimes longer) after they have successfully mated.

ANSWER BY G. W. DEMAREE.

In my locality young queens usually mate at seven or eight days old and begin to lay at ten days old. There is really no fixed rule, however. The ordinary limit of time for them to begin to lay eggs is from nine to fourteen days old. They generally lay eggs in three days after they mate, but not always. I have had young queens to lay eggs in two days after mating, and I have had them to mate late in the fall and lay no eggs till the February following, over three months after mating.

ANSWERS BY H. ALLEY.

1. Young queens will certainly take a flight for the purpose of mating during the honey-gathering season, when they are five days old, provided the weather is suitable. After the honey harvest, they will be from ten to fifteen days about it, unless the bees are treated according to directions given in my work on "Queen-rearing." Although I have reared over 60,000 queens during the past twenty-eight years, I never knew a queen to make the mating flight until she was five days old, and I think I have watched the process as closely as any one.

2. If she is a good queen, eggs will usually be found in the cells on the second morning after fertilization.

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Published Monthly.

HENRY ALLEY,
MANAGER,
WENHAM, MASS.

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SEE INDUCEMENTS TO SUBSCRIBERS.

Wenham, Mass, July 1, 1887.

THE MANAGER'S CORNER.

W. Z. Hutchinson's Book has lain on our table some time, but owing to pressure of spring work in our apiary, to which we have to attend, we have not been able to review it sooner. We have read the very flattering reviews of this work, and are sorry to say we cannot quite agree with them. We intend to express our views fully and freely on bee matters and shall endeavor at all times to do exact justice, and in the present instance shall live up to that rule.

The mechanical and typographical part of the book is good, the cover quite unique, and the style excellent. The price, twenty-five cents, seems to us rather high for the small amount of matter it contains; and when we recognize the fact that it is largely a compilation, or in other words, an expression merely of the best thoughts of our best writers, it strikes us that the general public will be inclined to think they are paying dear for what they have already read in the bee journals. From the reviews we have read we supposed we should find something original at least; but when on reading we found the ground travelled over was the same that Townley, Doolittle and others had worked over and over again during past years, we could only say to ourselves, how easy it is to write a book if one has an encyclopœdia to fall back upon; and then again, we must say we don't like to see any book, not intended as an advertisement, start out as does this, with a clean-cut certificate in favor of some hive. Advertisements are all right in their proper places, but Mr. H. has in our judgment overstepped the bounds of propriety in this respect.

We wish it distinctly understood that we consider the ideas contained in the book to be valuable; and were they original with Mr. H. we should have no fault to find, other than with the price. Mr. H. as a writer generally is terse and vigorous, and many of his articles are of value to beekeepers. We hope all our readers will read the book, as it will prove to them when they find nothing that has not already been told in our journal, that the "Art" still leads, as we shall always endeavor to make it.

Close Attention should now be given the bees. Do not relax in the least till you have secured every ounce of comb honey it is possible to secure. When one set of sections is a little over half filled raise them up and place another set under these. When the first set is nearly capped over remove it to a colony too weak to work in the sections and let them finish it and at the same time place another new set of sections on the hive from which the full set were taken. If dull weather sets in for a few days, feed the bees with thin syrup made of sugar and honey; this will have a tendency to keep the bees from deserting the sections.

A Curious Fact.—One of the queer things about wintering bees last winter is the fact that colonies that were weak in the fall came through in splendid condition, while the strongest colonies in many apiaries died. Now, here is a chance for Mr. Heddon, Professor Cook, J. E. Pond and some others to give us their ideas as to this very singular condition of things. It looks to me as though these eminent apiarists have a problem that will for a long time puzzle them. Take right hold of it, brothers.

Preserving Empty Combs.—Empty combs may be kept in good condition by placing them in a *dry*, cool cellar. If possible, arrange it so that there will be a free draught of air through the cellar at all times. The temperature will be kept so low that the moth eggs will not hatch, and the ventilation, as above advised, will prevent the combs from moulding.

More Ventilation is certainly needed when bees "lay out." This may be supplied by placing more sections on the hive, enlarging the entrance; or by raising the body of the hive an inch at the front from the bottom board.

Many beekeepers suppose their bees are intending to swarm when they cluster outside the hive. Well, that is an indication, but it is a stronger indication that the bees need more air or more storage room for honey.

Queens when they have had a chance to lay to their full capacity for two seasons will be worthless for a third year. There are exceptions to this rule, but not one queen in fifty is of much value at three years of age. Therefore, all queens should be considered old when they have been in the hive two years.

Combs Melting Down.—One of the results of improper ventilation is the melting down of the combs in the brood-nest; when this occurs the bees should be attended to at once.

Remove all the bees from the combs and hive, to a new hive and fix up things as quickly as possible. By so doing, the damage may soon be repaired; but left alone the colony will be ruined.

When the combs break down, the bees will rush out and cover the outside of the hive; many of them will be daubed with honey. If the hive contained much honey it will run out at the entrance.

Encouraging.—We are in daily receipt of most encouraging letters from the friends of the API. Words of praise of the fine and timely articles in the June number come in from all quarters. Subscriptions, too, are coming in rapidly, as about every beekeeper who sees a specimen copy of the API at once sends for our journal and one of the drone and queen-traps or fine queens, all of which we offer at such low prices.

Bear in mind we give each subscriber one of our improved drone and queen-traps, free by mail, or send them a select queen for 50 cents in addition to the $1.00 for a yearly subscription to the APICULTURIST.

Returning Swarms.—Do not fail to test the method for returning swarms as given in the June issue of the API, and do not forget to send us a report of your success or failure whichever it may be. I am pretty sure it will be successful in most cases.

If Queen-rearing is going on while forage is scarce, the bees should be fed liberally each day until the cells are capped with syrup made of three parts sugar and honey and two parts water. Rear your queens according to directions given in the "Beekeepers' Handy Book" and you will certainly succeed. I defy any person in the world to rear queens by any other method that will insure a certain number of cells to each colony or to rear such fine queens as can be reared by the methods given in the "Handy Book." I also challenge any beekeeper in the world to advance a more perfect system of queen-rearing, or practising one by which as perfect and hardy queens can be reared.

By practising the methods given in the "Handy Book" *better* queens can be reared provided the bees are supplied with not over fifteen eggs, *not larva*, to each large colony. I can give this number of eggs to a colony and am just as sure of fifteen fine queens as I am of one; and every time, too.

Send $1.10 and get a copy of the book, and if our instructions are followed and you do not succeed the $1.10 will be returned to you. We also promise to return the money if the book does not give perfect satisfaction in all respects.

Introducing Queens.—Much is now being said in all the bee journals about introducing queens. I know no way so sure and one that requires so little time and trouble as the three-day method given in the back numbers of the APICULTURIST.

The Season here thus far has been unusually poor for bees. The warm weather in early May brought forward the fruit blossoms early, but the trees were in bloom but a few days when dull weather set in, and nearly all the early honey harvest was lost.

White clover commenced to bloom by the tenth of June, but the weather was so cold that the bees did but little on that. Therefore, the prospect for a good crop of honey here in New England is far from encouraging.

Hard Luck.—It is not often that we have to cry "hard luck," but we have had quite a set-back this spring in the queen-rearing business.

Out of two hundred fine queen cells less than fifty per cent hatched, and a set-back like this, so early in the season, compels me to ask our customers to be patient for a few days or till about the time this issue of the Api reaches them.

By July 1 we shall have plenty of queens, so that we can ship by return mail. The cause of the non-hatching of the early queen cells was soon discovered, and the remedy at once applied. It was my opinion that the trouble was caused by feeding the bees with honey-dew honey which was taken from some hives of bees I had bought over fifty miles from my apiary. I use no such honey now without first scalding.

While bees all about me, say within a dozen miles, gathered honey-dew freely last year, none of it was taken by my bees.

A BIG BATCH OF QUESTIONS AND ANSWERS THERETO.

Hamilton, O.

Mr. Henry Alley:—

1. Would it hurt a queen to handle her by the thorax? Some say take her by the wings, but if we get hold of the wings on one side she would flutter and the wings might be torn.

2. Could you tell us how to transfer the queen from the shipping to the introducing cage?

[1. No. Handle queens by the wings taking hold of both wings at same time.

2. Let the queen out of shipping cage on the window, handle as above.]

Hamilton, Minn.

1. What is the best distance from centre to centre to space combs for extracting in upper-story?

2. Which is preferable for extracting, Victor frames $5\frac{5}{8}$ inches deep or those $8\frac{5}{8}$ inches deep?

3. What are the advantages and disadvantages of drone foundation for extracting?

[1. From an inch and three-eighths to an inch and a half. It would, in my opinion make but little difference whether it is more or less.

2. I know nothing about "Victor" frames, but will say that there would be less danger of the combs breaking if a shallow frame is used. Old combs would not break in extracting even were they twelve inches deep.

3 No advantage that I know of, but the more drone comb the more drones unless the queen is excluded from them. Very little foundation is made or used having drone cells.]

Hope Valley, R. I.

Mr. Alley:

1. Should I use enamel cloth or other cloth over frames in connection with a honey-board?

2. In putting queen cells in the nursery, do you lay them down or fasten them up in their natural position?

3. To remove a queen from the combs and not hurt her do you take her up with the fingers or use a "catcher?"

Wm. M. Chapman.

[1. No.

2. Fasten the cell in, small end down, in one of the small holes in the cage. One of the apertures is for the sponge, the other for the cell.

3. We use no queen catcher. Always handle an old or fertilized queen by the wings. When removing a queen from the comb, take her by the wings and pull ahead and no injury will result; if pulled backwards the legs would be injured. A person who is not nervous can handle a queen most any way without injuring her, but a timid, nervous person should use a catcher, or handle a queen by the wings.]

MR. ALLEY:

I wish you would tell me if there are any good reasons for *not* returning a swarm that has issued back whence it came and setting them to work in old hives, thus preventing increase. Am willing to pay for having my questions answered if you will set your price.

W. W. F.

[The objection is this: if a swarm is returned without first destroying the queen cells, the bees would come off again the next day, or would kill the queen and swarm again when the first young queen emerges from a cell. Try our method given in the June "API." It is a part of our business to answer questions, consequently no charge is made for so doing.]

Telford, Pa.

MR. HENRY ALLEY:

If I am not asking too much will you please tell me how wood separators are made that are used to keep the comb separate in the section boxes? My object is to get as much surplus as possible in one-pound sections. Would it be desirable to give the bees twenty brood-frames or only ten?

A. PAUL GERHART.

[Wood separators are thin pieces sawed from thick lumber. They can be made for one section or for more. These separators are placed between each two rows of sections to make the bees build the comb within each section. The separators are made narrower at the middle than at the ends, so that the bees can get into the section.

If you want to get all the section honey possible, don't use over eight frames (seven will do much better), in the brood-chamber. The larger the brood-chamber the less bees will enter the sections. Keep the brood-nest contracted by using few frames and that will compel the bees to enter the sections and while they are in them, if forage is plenty, they will build comb; and the field bees, or honey gatherers, will fill the new comb with honey.]

Yardly, Pa., 1887.

FRIEND ALLEY:

Received your Oct. APICULTURIST; in it saw advertisement of Alley's Nursery for Queen-rearing. You say virgin queens can remain in it for weeks. Now, friend A., I have some questions to be answered by you.

1. How long may a virgin queen remain unmated and after being mated become a fair queen? 2. Do those cells in your nursery cages answer for the second brood of queens or do new cells have to be put in every time? Will the old queen deposit eggs in the cells in the nursery cages or not; or do you have to let her lay eggs in brood frames and then cut them out? How many queens can be hatched at once in one nursery?

ELMER E. GREY.

[1. A virgin queen may remain in the cage from twelve to twenty-five days, and as soon as given a chance to fly after being introduced to a nucleus colony, will become fertile.

2. Certainly not; you do not seem to understand the workings of the Queen-nursery. A Queen-nursery is merely a set, more or less, of small cages in which are placed queen cells to hatch. The cells must be built by the bees, in full colonies, and when they have been capped seven days transferred from the combs to the Queen nursery. The cages are provided with food for the baby queen. When all is ready, a frame of brood is taken from a full colony of bees and the frame, in which the cages containing the queen cells have been placed, is inserted in its place. The honey-board or cushion is then placed over the frames or brood-nest, and in a few days the queens will have emerged from the cells; but as the cages are well supplied with food, the queens need no attention until the nuclei are ready for the reception of the queens, which will be when the bees have been queenless three or more days. Old queens will not deposit eggs in cells from which a young queen has just emerged.

Our nursery contains 21 cages, and 21 queens may be "hatched" at one time. We removed several nurseries to-day from full colonies, and found 21

fine young queens in each. Pretty good luck to commence with. You should read the Beekeepers' Handy Book. Think you would get more information from it in one hour than you will be likely to learn otherwise in several years.]

Walworth, Wis.

AM. APICULTURIST:

Can bees be wintered in a cave or root house near their summer stands? J. L. HALL.

[Yes, just as well as in a cellar, provided the cave is not too damp. No roots nor other vegetables should be in the cellar at the same time the bees are.]

Morgantown, Pa.

MR. ALLEY:

Do you consider the brown bees a better strain than the Italians? E. R. STYER.

[No, there is no strain of bees as good as the best strains of Italians. But there is a great difference in the Italians.]

Newport, R.I.

MR. ALLEY:

What is the best way to prevent moth worms, more especially in sale honey after it has been removed from the bees and is stored away, or is out being offered for sale? Also in spare either empty or full combs? I had trouble last season and would like advice before the trouble begins anew.

WALTER SHERMAN.

[Read the back numbers of the APICULTURIST and you will find replies to your questions. The worms do not trouble full colonies of bees. When a hive becomes queenless in the spring or at any time previous to Sept. 1, worms are pretty sure to devour the combs].

Gonzales, Cal.

AM. API.

QUERY:—Do you find that Cyprians and Syrians have the same characteristic with the Italians, of being slower than blacks to go up into the sections, when working for comb honey? Is that a feature of the yellow races in general, or of the Italians in particular?

Would specially like an answer from Henry Alley.

A. NORTON.

[I find the Cyprians and the Syrians are very much alike so far as entering the sections, and very much unlike the Italians. While the latter are very quick to enter the surplus boxes, the former are very slow to do so. I have not one word to say in favor of the Cyprians and Syrians, or any other imported race of bees but the Italians.]

Plainfield, Mich.

1. Is there any way to tell within a day or two when a new swarm is going to come out, so as to put on the queen-trap in time, provided you don't want to keep it on all the time?

2. Is there any particular time to catch and kill off the drones, or a part of them when there are a good many of them?

3. Is there not some way to extract honey from the comb without any kind of machine extractors.

4. Would like to know how to tell the *right* time to divide a swarm or hive instead of having them come out.

A. T. W.

[1. The only thing to judge by is to open a hive, and if there are queen cells capped or nearly capped, a swarm is very likely to issue within a day or so if the weather continues favorable.

A colony that is intending to swarm is not generally at work as smart as the others on the day of swarming. There will be considerable many bees about the entrance; many will be slowly working into the hive and while not doing much work seem to be somewhat uneasy. A swarm may be expected from a hive that is full of bees, and at any time when honey is plenty and the bees doing well, as it is called.

2. Would place the trap on the hive at any time when there appears to be a large number of drones in any particular colony. Place the trap on the hive from 11 A. M. to 3 P. M. Let the drones remain in the trap till next morning, then dig a hole in the ground, dump the drones in and cover them over.

3. None that I know of without mashing the combs as beekeepers used to do thirty years ago, or before the advent of the extractor.

4. Divide at swarming time, or later if you want to feed.]

Ashton, R. I.

EDITOR API:

1. I would like to ask you about two hives of bees that I lost last winter. There is quite a lot of honey in the combs somewhat soiled Now will the old combs do to use for new swarms?

2. If bees are put on such combs will not some of the old honey be worked over and stored for winter and injure the bees?

[1. Wash the combs thoroughly in warm water and place them where they will dry quickly. All the thin, sour honey will be removed by the operation and the combs will be sweet and clean and will not injure the bees if used again.

2. Some of the old honey might get stored and capped and not used next winter, but not much of it if the combs are treated to a good cleansing as advised.

Barton, Vt.

HUNTING BEES; INTRODUCING QUEENS.

Please give directions and description of apparatus necessary to hunt bees.

What is the best way for a novice to introduce a laying queen, having but one swarm and no other bees within two or three miles.

[Read the back numbers of the "API", also the methods given in this issue for introducing queens by Dr. Miller and G. W. Demaree.

Some one of our readers made this inquiry:

"Will a queenless colony carry in pollen?"

[Yes, during the early stages of the queenless condition of a colony the bees will carry considerable pollen; but, as the bees grow old, less pollen will be seen going into the hive, and what is being carried in will be in very small pellets, so small, in fact, that it can hardly be seen.]

GLEANINGS FROM CORRESPONDENCE.

Cedar Springs, Mich.

MR. ALLEY:

I like your strain of Italian bees, and all who have seen them admire them. Please give price for ½ dozen queens.

I packed my bees in the following manner: Half-inch bee space over the brood frames, wire screen on top, woollen blankets on screens and chaff cushion over all.

WM. MCL.

Angelica, N. Y.

FRIEND ALLEY:—

HAVE never wintered bees so successfully, as during the past winter. Hav'n't lost a colony! Each one stronger, if anything, than it was last fall! Who can beat that?

I wintered my bees on their summer stands, and have come to the conclusion that is *the* way to winter them. The air around the apiary is fairly "yellow," to-day with the "little fellows," and I think the prospects are *good* for a heavy flow of honey this season. Now, if some aspiring bee writer would only tell us how to get rid of our honey at a remunerative price, what a blessing it would be for that "aspiring bee-writer"! But, as it is, "it might be worse," and certainly both bees and beekeeper ought to be happy.

READER.

Argyle, New York.

Please send your 32 page catalogue. Am sorry you have left your Price-List out of the API. It has been a destructive winter to bees in this section; no matter whether wintered in cellars or on summer stands. The loss has been from ½ to ⅔. There was a heavy honey dew last fall. Some attribute the loss to that.

O. L. WHITCOMB.

Gonzales, Cal.

FRIEND ALLEY:

I have a habit that, in spite of my efforts to suppress it, sometimes crops out; in writing rapidly, I misform letters, make omissions of words and punctuation marks that count much for the worse. I see that I did so in my last. By leaving out a period after *Eucalyptis* which ends in a sentence and making my capital "F" look like a "C," I made myself seem to say that the blue gum tree is a plant of the geranium family, etc.

Blue gum is *Eucalyptis globulus*, a tree from Australia; *Filaria* or *alfilaria* (the accent on syllable "ri" which sounds like "rē") is the Spanish name for a plant of the geranium family without the English name, except the corruption "filaree," etc. The mistake is mine, but if you will please to correct it you will oblige me.

The season is still dry, only about one-half crop of general products.

Accept congratulations on June issue and its articles on comb honey.

Truly yours,

A. NORTON.

Ai, Ohio.

MR. ALLEY:

Please send me ½ dozen Drone and Queen-traps. I bought some last year and would not do without them.

S. S. MUNSON.

Hamilton, O.

The APICULTURIST is far ahead of any bee journal I have seen for practical information.

J. K.

Stratford, Ont.

MR. ALLEY:

The queen I got from you last season has brought through the winter the strongest colony of bees I have in my apiary.

E. W. PANTON.

Denison, Iowa.

Accept my congratulation on publishing that most excellent array of articles on comb-honey in the June APICULTURIST. You have struck the key note of "helpfulness" in your journal.

Z. T. H.

East Templeton, Mass.

MR. H. ALLEY:

I see you advertise to send essays "How to Winter Bees." I can give you something better. Use the Bay State Hive. I have the one now that I bought of you I don't know how many years ago. It has wintered bees every time as no colony ever has died in it yet, and it stands in the same place now that it has stood for years.

RUFUS STICKNEY.

Ohio, Ill.

DEAR SIR:

I received the drone and queen-traps and all were sold within one hour. Send me 25 more.

R. M. KNIGHT.

Lawndale, Ill.

MR. ALLEY:

Please continue the API. There is not a more thoroughly instructive bee journal published, and the articles are timely and to the point.

The queens I procured of you last season are uncommonly fine.

F. C. BLOUT.

Upper Jay, Essex Co., N. Y.
June 7, 1887.

HENRY ALLEY.

I received your Queen and Drone-Trap and like it very much, for yesterday the first queen that you sent me led out a large swarm and I did not have to climb trees after them.

A. D. KNAPEN.

HIS WIFE LIKED IT.

MR. ALLEY:

We bought one of your drone and queen traps last season and my wife likes it so well that she would like about one dozen more of your improved traps. Please ship them. $3.50 inclosed.

J. G. HILL.

[We have sold several thousand traps the present season, and of the 50,000 in use not three customers have found any fault or made any complaint of them. We guarantee the traps to work and do all we claim for them.]

Springville, N. Ca.

I take four bee journals, but like the "API" best of all.

JOHN BAPTIS.

I consider the AMERICAN APICULTURIST invaluable to apiarists.

A. G. W.

Christiansburg, Ky., June 4, 1887.

FRIEND ALLEY.—Though ever so busy and half sick, I have prepared a hasty MS. for your July issue. The June issue of the "API" is decidedly a success. It would be hard to beat the general make-up of your paper. I am glad to see it prosper.

Our bees have got on slowly and badly till a week past; weather unfavorable, wet, cloudy, cool in turns. Bees are right now gathering honey rapidly, "kind of pouring it in."

G. W. D.

NOTES FROM THE BAY STATE APIARY.

HENRY ALLEY.

SHIPPING BEES.

I have received several lots of bees from parties residing a long distance from Wenham, and from men who ought to be considered expert beekeepers; yet not one lot out of all sent me were properly packed, as all the combs in some of the hives were broken off at the top of the frame and more or less of the combs were broken in all of the hives but one. In one case a very large colony was shipped to me from a place which required a week's time in coming; yet, this colony was not given half as much room as the quantity of bees it contained should have had. The consequence was that two-thirds of the colony and all the brood were dead.

A large colony, even though it is to be transported but a short distance, should have a space of not less than two inches under the frames, and certainly four inches above them. Unless plenty of room is given the bees to cluster off from the combs, the heat created by the bees and brood combined, will certainly destroy the entire colony. The hive in question was covered with wire-cloth, both top and bottom, which was just right; and, had sufficient space been given for the bees to cluster away from the comb, there would not have been one half a pint of dead bees in the hive, notwithstanding the fact the bees were on the road five days. Another full colony was shipped from Vermont; the condition was very fair, but had the weather been warm as it was a few days previous the colony would have been ruined, as the combs were new, and there was nothing between the bottom of the comb, and bottom of the frame, nor between the bottom-bar and bottom of hive to keep the combs from breaking. As it was, only two combs were broken and all in a heap in the bottom of the hive. One 3-frame nucleus came by express, and as the packing was about the same as with the full colony all the combs were broken, the brood dead, and all ruined but a pint of bees and the queen.

If this reaches the eye of any of those parties, who shipped those bees, I hope they will not forget when they pack and ship more bees to give plenty of ventilation, and by all means, place some pieces of wood between the bottom of the combs and bottom-bar of the frame as well as under the frame. Bees thus packed will go safely hundreds of miles.

When I have a colony packed and all ready to deliver to the expressman, I then dash about a pint of cold water in among the bees and combs. This will supply the

colony with water, for twenty-four hours at least and it also has a tendency to keep the bees cool and quiet.

I once received a colony of bees from the west which were packed splendidly. Above the combs was a space of about three inches, and water was supplied the bees by rolling up some burlap and thoroughly saturating it with water. This bundle of old bagging was fastened in the space over the combs. It was the best method I ever saw for supplying water to bees while being transported.

MARKING HIVES.

The beekeeper who has a large apiary, or who is rearing a large number of queens cannot stop to make a written record of everything going on in the apiary. Mr. Doolittle has given his plan for keeping a convenient record of each colony of bees in his yard, but such a method would not do for me. I must have something more convenient and easy to handle. Mr. D. uses small stones placed on each hive to indicate the condition of each particular colony ; that is very good, and I sometimes use stones myself for certain marks. I carry in my pocket some large flat-headed tacks, or nails. Should the reader visit my apiary he will notice that each nucleus hive has one such nail sticking in some part of the cover of each hive but not all are placed in the same position. When a nucleus is known to be queenless the nail is invariably placed in the front edge of the cover of the hive. A nail has been thus used in my apiary for nearly twenty-seven years. When the nail is placed on the *front* of the hive it indicates that a queen-cell was recently put in the hive. Now if a lot of cells are introduced, say to-day, the nail is placed in the centre of the front of the hive. If another lot of cells is given other hives the next day the nail is placed at one side of the center of the front, and so on. The different positions of the nail when placed in the cover of the hive indicate the different lots of queens or cells that have been introduced from day to day. When I want a lot of queens to ship I am not compelled to open every hive in the yard to find those laying. I keep the run of all the queens that are likely to be laying by the position of the nail. For instance, when the nail is sticking in the centre of the cover I know that that queen has been in the hive long enough to become fertile. I open the hive and find that the queen is laying. Well, now if those hives that have the nail in the centre of the cover are opened, twenty-four out of twenty-five queens will usually be found laying. The advantage of the nail system will readily be seen by anyone, as it saves much time and labor, when one has 300 nucleus hives in his apiary to attend to. Some one will say, "wonder how one can know what hives contain tested queens or a very fine queen?" Well 'tis easy enough. When a hive contains a very choice queen two nails are placed side by side in the cover of that hive or three nails as the case may be. It is no trouble to keep a lot of nails in one's vest pocket for use at any and all times. One nail is generally all that is needed for a hive during the season.

QUEEN-REARING.

Although we had a set-back early in the season by the cells not hatching, we are now doing well, and can forward queens by return mail.

This spring we have purchased several quite large lots of bees of various strains. Some pure *black*, hybrids and some fine and very pure colonies of Italian bees. The

latter were purchased of Mrs. Mary E. Pray of Greenland, N. H. The husband of Mrs. Pray was one of the most enthusiastic beekeepers in New England but by the merest scratch to his foot from a rusty nail in August last, while he was repairing his house, he lost his life by lock-jaw in just nine days after the wound was made. Mrs. Pray could not care for the bees and so we bought the lot, and moved them to Wenham.

We found among the bee fixtures of Mr. Pray all sorts of modern appliances used in the apiary. He was a beekeeper who kept up with the times as all beekeepers do who take an interest in apiculture.

BLACK BEES IN SHIPPING CAGES.

As we have stated in our manual of queen-rearing, black bees are far better for nurse bees than the Italians, and so when we can find such bees for sale at prices to suit us, we purchase them. Nearly all our nuclei are made up of black bees, and when we ship queens more or less dark bees will be put in the cage with the queen. This fact is mentioned to save some of our customers from writing thus: "If the bees in the cage with the queen you sent me are some of her progeny she must have met a black drone." Oh dear! how many times we have had to write and explain this same thing during the past thirty years.

Don't forget that we have perfect control of the drones in our apiary by the use of the drone-trap. No black drones ever fly during the queen-rearing season about here.

SMALL QUEENS.

Sometimes a patron for a queen will write and say "the queen was received in good condition but looks small." Of course the queen is small; why shouldn't she be after being confined in a small cage for nearly a week and having in the meantime travelled nearly 2,000 miles in some cases? When the queen has been introduced to the colony a week, then your opinion concerning her will be in order.

Wenham, Mass.

All who Subscribe for the APICULTURIST, at any time, will receive one of our combined Drone and Queen-traps free by mail. This is our method of introducing the APICULTURIST and our Drone and Queen-traps into every apiary in the United States.

Those who receive the trap as a premium must not expect to get the Handy Book or a queen for fifty cents, as the profits are so small that only one premium can be given each subscriber.

NOTICE.

We do not advertise to give premiums to those who subscribe through other parties. We pay news' agents a percentage on all subscriptions sent us, and if you choose to give the agent a profit instead of sending direct to us, it is no fault of ours.

Our Club Rates.

Am. Apiculturist and Am. Weekly Bee Journal,	$1.80
Am. "Api" and Gleanings (semi-monthly)	1.90
" " " Bee Hive (bi-monthly)	1.00
" " " Beekeepers' Handy Book	1.50
" " " Cook's Manual	1.70
" " " A Year among the Bees	1.50
" " " Alley's drone and queen trap	1.00

TO ADVERTISERS.

We will accept of bees, sections or foundation in exchange for advertising space in the APICULTURIST.

H. ALLEY.

Bees by the pound.—If one has some nice combs, a good colony of bees may be reared in a few weeks by purchasing a pound of bees and a fine queen. Sugar can now be purchased in most places at the rate of 15 lbs. for $1.

We can fill a few orders for bees, and queens with them, at the rate of $1.50 for bees and $1.00 for the queen. They will be packed in good shape and safe delivery guaranteed.

The June number of Api should be read by all who take an interest in apiculture. Our readers will find METHOD NUMBER SIX in this issue by R. L. Taylor. All the essays will be stereotyped so that they can be supplied to all who desire them, by and by.

FACTS ABOUT HONEY.

Honey is the only purely natural sweet in a commercial form. It is the nectar of flowers gathered and stored by the bees, and changed by them to the smooth, mellow sweet known as honey. It furnishes the same element of nutrition as sugar and starch—gives warmth and energy. Starch and sugar when eaten undergo a digestive change before they are assimilated. In honey this change has been made to a considerable extent by the bees. It is partly digested, easy of assimilation, and concentrated. The longer honey is on the hive the more complete is this change. It derives its flavor from the blossoms from which it was gathered. There is as much difference in honey as in milk or butter, and the same liability of adulteration. Owing to low prices, caused by improved methods and increased production, it is less adulterated than formerly, probably no more than other food products. Now every producer's name is on each package, and he thinks as much of his reputation for producing a good article as does the producer of choice fruit or butter.

Almost all pure liquid honey will candy or become hard at the approach of cold weather, unless sealed while hot. This is one of the best tests of its purity. Candied honey can be liquefied by placing the jar in water or an oven and heating until melted. Overheating injures the flavor. Adulterated honey will not completely candy. Comb honey can be adulterated only by the producer. Its wax furnishes an agreeable non-irritating bulk so desirable with concentrated food, and as chewing is necessary proper digestion is promoted.

As a table ornament which appeals to both eye and palate a plate of delicate comb honey is unexcelled. Extracted honey is the liquid honey thrown from the combs, pure and bright, by a machine called an extractor. Strained honey is obtained by mashing combs of honey, which often contain immature and dead bees, and bee bread and straining: this is inferior in flavor and appearance. Extracted honey can be sold for less than comb honey, as the combs which are more valuable than honey are saved, and used time after time.

As a medicine, honey has great value and many uses. It is excellent in most throat and lung affections, and is often used in place of Cod Liver Oil with great benefit. Occasionally there are found people with whom it does not agree, as is the case with other articles of food, but the majority can learn to use it with beneficial results. Children, who have more natural appetites, generally prefer it to butter with their bread. Honey is laxative and sedative, and in diseases of bladder and kidneys is an excellent remedy. It also partakes of the medicinal properties of the plant from which it was gathered. It has much the same effect as wine or stimulants without their injurious effects, and is unequalled in mead and harvest drinks. As an external application it is irritating when clear, and soothing if diluted. In most country places the qualities of honey are appreciated, and it is much used for croup and colds.

In preserving fruit in a natural state the formic acid it contains makes it a better preservative than sugar syrup. In cooking and confections it is also used.

[The above was taken from a circular published by Mr. Samuel Cushman of Pawtucket, R. I. These circulars are given to each purchaser of his honey and is one of the best methods for increasing the sale of honey.]

Mr. Arthur Todd has been unwell for several weeks. As soon as he recovers his usual good health he will furnish the readers of the API with some fine articles under the head of Foreign Notes.

The American Apiculturist.

A Journal devoted to practical Beekeeping.

ENTERED AT THE POST-OFFICE, WENHAM, AS SECOND-CLASS MATTER.

Published Monthly. HENRY ALLEY, MANAGER.

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For the American Apiculturist.

EXTRACTING HONEY; QUEENS, ETC.

BY C. W. DAYTON.

Of my 116 colonies of bees (the same number there was last fall), 90 were ready for the harvest when it came, the other 26 having been made weak by sparing brood to help the 90. In one day I prepared, and placed upon the hives, 60 stories of empty combs for extracting. On another day of ten hours, I transferred from the hives into barrels 706 pounds of extracted honey, not counting that contained in the cappings; and I also hived three swarms of bees during the time.

Figuring 80 pounds to the colony, for 60 colonies would equal 4,800 pounds and would require about seven days for one man to extract it; one day to adjust surplus stories and one day to take them off, making nine days in all, to run 60 colonies through the honey harvest for extracted honey.

Now, if 60 colonies can be managed from the adjustment of the sections to the hives until they are neatly stored in the honey house with less time and labor than that I cannot imagine how it is done.

To do a "big" day's work in extracting, the combs should be well filled with honey and about one-half capped to insure its ripeness. It is a very good plan to place the combs in the hives rather far apart to make them thick so as to contain more honey.

I have had combs 11¼ inches square that weighed 13½ lbs. In uncapping honey, the shavings should be as thin as possible, and a person who would not shave thinly would waste many times his wages. Just think of it; 45 pounds of honey it costs to produce a pound of wax which only sells for 20 or 30 cents, and yet there are many who allow the cappings to be one-half of an inch or more in thickness.

One of the nicest features in producing combs of honey for extraction is to have them filled entirely with honey and the brood all remain in the brood-nest. There seems to be a difference in queens in this. While some will stay closely in the brood-chamber, others will run all over placing a little patch of brood here and another there and still others will immediately move into the upper story to stay. Of all the queens, the first one mentioned is greatly preferred, and the difference is almost enough to betray happiness or disgust in the beekeeper's countenance. When the queen moves about in more than one story, the bees usually build queen cells in the story that is the most neglected. In this way I have known several colonies to swarm taking with them a virgin queen and the old one also.

Some will recommend queen-excluding honey-boards. This works nicely until we come to a queen

that requires more space for egg-laying than is afforded in the brood-chamber in which case she becomes crowded for room, puts eggs in queen cells and a swarm is the result.

Since trying both methods, I have concluded that it is the more profitable to leave off the excluder and spend *my* time extracting from combs filled partly with honey and partly with brood (and some larvæ in the honey) than to have the bees spending *their* time with swarming and its effects during the honey flow. If I could have my wishes, I would have my most prolific queen in the poorest colony and the less prolific queen in the best colony, at the beginning of the honey harvest, as I attribute the reason for a queen remaining in the brood-chamber, to her being less prolific and from the hives containing such queens we get the best filled combs to extract.

Bradford, Iowa.

For the American Apiculturist.

VENTILATION.

By Dr. G. L. Tinker.

During hot weather hives should be well ventilated. I am as well satisfied as on any other question of apiculture, that bees require more ventilation than it is usual to give. Our summer entrance we now make $1\frac{1}{4}$ inches deep, and $8\frac{3}{8}$ inches long, and give space enough under the frames so that the full benefit of so large an entrance is secured. With our new-bottom board the bees enter from below the brood frames. We have had no swarm desert any of the hives with this large entrance, and no precaution has been taken to keep them from swarming out. We have hived twenty-four prime swarms and returned the second swarms.

The weather has been very hot for a week or two, so that with large colonies we feel sure that some of the swarms would have deserted the small brood-chamber we use, if it had not been for the large entrances. With very large swarms we lift the hive cover and place a block under one end so that the bees can come out on the top, if they choose, but find that all go out and in at the entrance. On very hot days with the thermometer at 90° in the shade, the bees will nearly all come out of the hives, clustering outside and practically cease work, if the hive is not freely ventilated at the top and as the flow of honey may be at its height at such times, we must keep the greater part of the bees inside the hive or the time will be lost as well as much honey.

In ventilating at the top we find a great deal of trouble with double-walled hives, so much so, that we feel like discarding them altogether. The bees will go above the section cases and cluster in the cap and build comb, seemingly in preference to working in the sections. With our single-walled hives we have no trouble of this nature, and consider them infinitely preferable in many respects aside from ventilation. As we make our hives very thin-walled (only $\frac{3}{8}$ thick on the sides) we find them when shaded, much the coolest and requiring much less ventilation than double-walled hives. As our colonies increase in size and the store of honey, we tier up with section cases, or brood cases (using a wood and zinc honey-board between them) according to the necessity, so that our small hives can be made as large as any one could wish, and whether small or large we can always give all the ventilation needed and keep the force or wax workers all in the hive.

New Philadelphia, Ohio.

For the American Apiculturist.

BEE CULTURE.

By J. E. Pond, Jr.

No one can doubt for a moment that bee-culture is not only a progressive but a progressing business, I might well say science. Bright and active minds are constantly at work in the endeavor to simplify matters, and inventive genius never ceases in its attempts to originate simpler, cheaper and better supplies. The low price of sugar has had its expected effect in reducing the price of honey, and as a matter of course something must be done to meet the necessities of the case. "The race is not always to the swift," however, and he is not always the greatest benefactor who rushes a theoretical hive or section-case upon the market, without having first given it a thorough trial. There is still just enough of the mysterious connected with the honey bee to induce many to be taken in by prettily written articles in favor of this, that or the other hive or frame, and new styles when well advertised and explained by a specious writer, and purchased largely, and of course condemned when found wanting in the points claimed. If no one was injured thereby except the buyer and seller, but little injury would be done; but the trouble goes far deeper than this. The purchaser, who has once been deceived, will look out in the future, and condemn not only the particular person by whom he was deceived but also every one else who is engaged in offering a new article of trade. The honest must and does suffer, by reason of being placed in the category of the dishonest, and when he offers a really valuable article, he finds no sale for it, simply because the swindler has put in his work previously, and destroyed confidence in all. It is not usually my province to praise any article in the line of beekeepers' supplies; in fact so many humbugs of that kind have been offered for sale, that I have found about all I could find time to give in that direction taken up in criticising unfavorably.

I have no interest whatever in any article in the way of supplies, or the business of any manufacturer and for this reason my criticisms are wholly disinterested. My sole object in writing on bee-culture is to aid some one over a rough road, and I am well paid if one only is benefited thereby. The swarming season is not fairly over yet, and there are still many who are desirous of learning some way by which they can go off from home in the morning, with full confidence, that a swarm will not or cannot issue during the day, and a valuable queen lost by its decamping. To all such I will say you can do this with perfect safety and with the full assurance that not a single swarm can be lost by "absquatulating." All that is required is to purchase one of "Alley's queen and drone traps," attach it to the hive, and then go about your business; not a queen can then escape, and no trouble or annoyance is caused to the workers. In fact, this little article works like a charm, and is really one of the most meritorious little inventions in the way of beekeepers' supplies that has ever been offered for sale. The price is low, so low, that the satisfaction found in being able to go away from home with full confidence for but a single day, will be ample remuneration to the purchaser. I speak of this trap as I have found it. When it was first offered, I did not believe it would work well; however, I tested it, and have found that it is just as near perfection as we can get in these days. I am away from home

every day "from early morn till eve," and have been obliged, till I got "the trap," to divide when I did not wish to do so, in order that a swarm might not run away in my absence.

Now all this is changed. I go away in the morning, knowing I shall find my bees at night on my return, just where they were left. My better half is enthusiastic over the "trap," as she does not now have the care and trouble of constant watching, that she once did have, and all is serene and pleasant where once were bother and confusion. As the name indicates, this trap is useful in more ways than one. It is a great aid in controlling fertilization, as any particular drones may be kept from flying at any time, and can be captured without trouble if desired. My advice to every beekeeper, even of only two or three colonies, is to procure at once one or more traps and be happy.

Foxboro, Mass., June 21, 1886.

FOUL BROOD: COFFEE AS A DESTROYER OF PUTREFACTION.

From British Bee Journal, June 24.

The opinions of the treatment of this plague are very various. Some recommend salicylic acid, camphor, etc., and claim to have attained certain cures with them; whilst a large number of beekeepers deny to these remedies any influence whatever on the course and the disappearance of the disease, and consider the destroying of the infected hives as the only proved means of saving the other hives.

If it were permitted to make an assertion here, we should allow ourselves the following one: *The former have succeeded in good honey years, the latter in bad years.* [This is opposed to our experience.—Ed.]

On this occasion we again refer to our article:— "In good honey years Foul Brood disappears of its own accord." [See page 268, *B. B. J.*—Ed.]

The opinion, which is therein represented, that up till now Nature herself is the most effectual combatant against foul brood, has been shared already by many experienced beekeepers. The notices which have reached us on this subject prove this. We shall refer to them shortly. Lehzen wrote several years ago in the *Centralblatt* that foul brood appears from time to time in certain neighbourhoods of North Germany, but disappears also of itself again. Were this not the case, as Lehzen affirms, were Nature not able to combat this devastating plague, yes, even to extinguish it, the busy bee would already long ago have disappeared from the face of the earth. [Like all epidemics which run their course; but that is no reason why we should apply no remedies.—Ed.]

After all this, therefore, we stand independent of Dame Nature, somewhat helpless in regard to foul brood; all the more welcome, therefore, should the following communication from Herr Wüst of St. Amarin, Upper Alsatia, on "Coffee as a Destroyer of Putrefaction."

When on September 21, 1885, at the general meeting in Colmar, all the means hitherto used for the cure of foul brood were roundly rejected on all sides as too troublesome, too expensive, too uncertain, and fire and flame recommended to the expert as the only radical cure. I consoled myself with the hope that our indefatigable scientific men would yet succeed in finding a more suitable means.

As it seems to me now, it has already been found on Alsatian

ground by Dr. Oppler (upper staff physician) in Strasburg—a means to be found in every house—in the form of coffee, roasted and pounded to the finest dust.

In the December number of the *Deutschen Militär Arzlichen Zeitschrift*, many observations have been communicated about the application and effect of coffee as "a destroyer of putrefaction," which were made on objects easily subject to putrefaction, such as blood, size, and meat.

In a small glass ten grammes of blood were well shaken together with one gramme of powdered coffee, at a temperature of 60° Fahr.; after two days there was no trace of putrid smell.

Blood which had already become putrid was shaken up with one gramme of powdered coffee in a test-tube, lost its smell after half a minute, and remained without smell for one and a half days.

Ten grammes of a solution of size, which had already begun to smell bad, with half a gramme of coffee, well shaken together, lost its smell in half a minute, and remained so after twenty days, although the solution was exposed in an open glass to the oppressive heat of July.

Twenty-five grammes of meat, finely chopped, impregnated with eleven grammes of powdered coffee, left uncovered, showed the same result.

Fifty grammes of meat kneaded together with nine grammes of powdered coffee, after three days became perfectly dry, without any trace of smell, so that it could be rubbed to a powder, with a loss in weight of 64 per cent.

After it had been indisputably proved that powdered coffee possessed the power of preventing putrefaction, and interrupting the process where it had already set in, the next thing was to try this powder in the treatment of wounds.

Two soldiers had got gaping wounds from four to five centimetres long, penetrating even to the periosteum of the bone of the skull, from a fall from a flight of steps; one had begun to fester. In each case after the finest powdered coffee had been strewn over it, the wound was dry and scabbed over on the following day, and on the third day the man was fit for duty.

Similar splendid results have to be recorded in the treatment of animals with respect to the subduing of bacteria. But bacteria, as is well known, are the bearers of the germ in the bee plague—foul brood. A doubt that the beekeepers' terror cannot be conquered by powdered coffee seems no longer admissible. The advantages are apparent. The means can be had everywhere, cheap, easy to use, and in larger doses even it is harmless. In what way the application of it will have to follow, the experience of unfortunate beekeepers will soon show. I, for my part, would strew or fill suspected cells with powdered coffee, in badly infected hives would break down all brood-cells, which, as they in any case would be completely dried, would be easily cleaned. Too large a dose could scarcely hurt. A very important advantage consists in the fact that as the remedy is to be used dry, it sucks up all dampness, and facilitates greatly the purification of the hive by the bees themselves. Also, as a preventive, an addition of coffee to the water for the bees to drink must be well suited. I beg you will take these words in the way they are intended—as an incitement to attempt cures. The remedy is so cheap, so simple, that it would be inexcusable to subject the poor little darlings to a fiery death without having first tried it.

Beekeepers! Coffee as a destroyer of putrefaction has attracted the attention of the scientific

world. Let us follow the advice of Herr Wüst, and let us devote our attention also to this simple antiseptic. Let us not lose the opportunity, as soon as foul brood appears, of making the attempt of a cure with powdered coffee. It can do no harm in any case. Do not let us let the foul-brood question disappear from the order of the day, until at length the remedy has been found to keep the brood plague in a simple and sure manner far from our apiaries, and when they are infected to free them from it.

[In our opinion there never was a case of genuine foul brood cured without the application of some active remedy. The idea that "Nature" will work a cure during a good honey season is simply nonsense. Every colony that has been diseased by foul brood has been destroyed, and as we have often suggested and recommended, fire is the quickest and most effective remedy, unless coffee will do all that is claimed of it. If any of our readers has foul brood in his apiary, will he try the coffee cure and report to the "Api" the result?—Ed.]

For the American Apiculturist.

THE ALBINO BEE.

By Charles H. Smith.

In the June number of the "American Apiculturist," under "Items of Interest," I see that the Albino bee is greatly condemned, and that by the editors. Quite a number of our apiarists were much surprised when their attention was called to these items, as the Albino bee is becoming a great favorite, not only in this but in other states. For myself I cannot imagine to what tests the Albino bee was subjected in the yards of the "American Apiculturist," or just how they were managed in order for them to win such a poor reputation.

I have between thirty and forty colonies of pure Albino bees and they have always given me the best of results, and have been the most profitable bees in my yard; but as soon as I read the article above referred to, I wrote to several whom I knew had tested the Albino bee extensively, hoping to hear from them the correct pedigree and history of the Albino bee, and in this way to gain more information as regards this race of bees, and also to see whether or no the Albino deserved the description given by the "Api," or whether their bees compared as favorably with other races as mine have done. Having heard from most of those with whom I have corresponded in regard to this matter, I think I am safe in saying that they all with one accord sustain me in stating that they stand ahead of any bee that we have in our apiaries.

You claim that the Albinos are very handsome and very gentle; thus far you agree perfectly with all the others; but when you say they are practically good for nothing, except one desires these qualities alone, then I consider that you are condemning the bee unjustly.

Mr. Valentine, who first brought this bee in a pure state before the public, says, that they are not the result of inbreeding as you claim, but are procured by breeding from queens which first showed a peculiarity in their markings and whose progeny invariably produced the same white bands and white down.

I believe that Mr. Pike first

discovered bees having white bands, but he did not at that time succeed in producing bees all of which showed these markings. The honor of producing the first pure Albinos, I think, belongs to Mr. Valentine.

In a letter received from him a short time since, he writes: "The Albino bees have bred up from the Italians. You know that all leading beekeepers agree that the Italians are not a pure race. In the Italians we have some very yellow and rather small, others very bright but larger; also we have the dark and leather-colored ones. We find in the larger and better marked ones, some of the peculiarities of the Albino, and I never saw these traits in a low grade of Italian. I first produced the Albino by a series of cross-breeding."

Now will not the readers of the "Api" give us the benefit of their experience with the Albino and let us hear all that we can about them before we condemn them to "utter oblivion."

Pittsfield, Mass.

[We have nothing to retract regarding what was said concerning Albino bees. This spring we purchased eighteen colonies of bees, and among the lot were ten colonies of the Albino. The person of whom we purchased the bees sold them because he could get no surplus honey. They were used by us for nuclei colonies and all have now nearly died out but two or three colonies which we kept to further test the working qualities of this peculiar strain of the Italian. Not one of these colonies have made an ounce of section honey, nor did they fill the comb in the brood-chamber as full of stores as did other colonies in the same apiary that were very much less populous. Some of the Albino colonies had a peck of bees in them, as the queens were very prolific, but stored no honey. The nucleus colonies formed of the Albino bees did not gather honey enough to keep them from day to day, and were the first colonies we had to feed in order to keep them from "swarming out."

We would like to have our correspondent answer this question: "How did Mr. Valentine keep these Albino bees pure except by inbreeding?" There was nothing in the "bee-line" to cross them with. Unless inbreeding is practised, the purity and beauty of the Albino strain will soon deteriorate. How otherwise can these two unimportant qualities be preserved?

We wish to remind our friend that Mr. D. A. Pike, of Smithburg, Maryland, was the first person to develop the Albino bee in all its purity and beauty, and to him belongs the credit for the same.

We are raising no Albino queens at the "Api" bee farm, and shall not again do so.—ED.]

For the American Apiculturist.

HOW TO MAKE A CHEAP SMOKER.

BY CHAS. A. HOUGHTON.

I keep only a few colonies of bees and have used a smoker of my own invention which may be of service to some. For twenty cents, I bought an "insect powder gun" (sold commonly at the stores for blowing insect powder around a room), which is simply a round tin box, one side of which is a spring bellows and in the opposite side a hole for introducing the powder. I then took a round tin box $1\frac{1}{4}$ inches diameter, $1\frac{1}{2}$ inches high, removed the cover, cut a hole in the bottom and placing this hole over the hole in the "insect gun" soldered the bottom of the box firmly to the side of the gun. I then stopped the little tube projecting from the gun with cotton and my bellows was ready.

To make a smoker, I take cotton rags and wind them around a stick one-fourth inch diameter, winding it large enough so that one end of smoker will just fit snugly in the tin-box on the side of gun. I then wind a small wire around it, fit it in the box and withdraw the stick which leaves a small aperture through the smoker through which air and smoke are drawn in to the gun and blown out again by means of the bellows. Make the smoker three or four inches long. The same wire can be used many times.

Instead of rags I have of late used *green moss* which you find plentifully in wet woods. I wind

the moss in the same way and, *while damp* one can wind it very hard and firm. I make a quantity of these smokers at one time and dry them in the sun several days and they burn freely as rags and make a good smoke.

Such a smoker as I have described is often handy even if you use a larger one. It can be lighted with a match in half a minute and, as the soap-makers say "it just fits the hand."

West Medway, Mass.

QUEEN-REARING.

By Henry Alley.

(Continued from page 160.)

Our friend over the border gives notice that he is experimenting with a view to perfect a method for rearing queens, so that they can be sold for a small sum, say one cent each. I name the price, as when a large number of queens are reared by one colony of bees the above price is all they are worth. This reminds us that Professor Hasbrouck once advertised queens for about twenty-five cents each, as he had some way for rearing them, so that he could afford to sell at the rate of four for one dollar. However, people did not want such queens, or else, after experimenting for awhile, the Professor found there was no money in rearing queens for twenty-five cents each. Such is the fact, and every queen dealer in the country knows that good queens cannot be reared and sold at a profit for less than one dollar.

The fact is beekeepers do not want *cheap* queens, and the man who advertises them generally loses his reputation and ruins his business. We advertise queens at $10.00 per dozen, but our orders are largely for queens we sell at $2.00 and $3.00 each.

If our friend really desires to know some method for rearing queens in large numbers and by any one colony of bees, we suggest that he read the "Beekeepers' Handy Book," as that work teaches the most approved methods for rearing queens either a few or many to a colony. It will instruct any one how to compel a colony of bees to build 1,000 cells, and it also tells the reader that queens reared in such large numbers by any one colony are worthless.

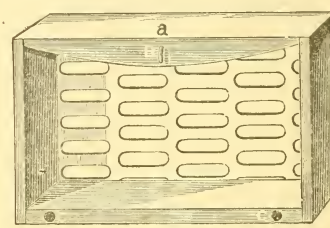

Fig. 1.

We hope the person who is making such an effort to rear queens so cheaply and to outdo the "Yankee beekeeper" will be frank enough to tell his readers that not over twelve queens should be reared by any colony of bees. Let the beekeeper direct his efforts so as to rear better queens than are reared under the swarming impulse. It can be and is done though some unexperienced people laugh at the idea.

One of the experiments we tried for rearing queens was to see if a colony of bees whose hive should be full of comb and brood in all stages could be made to build queen cells just where we chose and from the eggs given them. The first trial proved a success. A queen was removed just before sunset, from a very large colony

and the next night comb containing eggs, prepared the same as described in the third edition of the "Handy Book," was given the bees. One or two cells were built from the eggs in the comb the queen had laid before being removed; but most of the cells were built on the little strips of prepared comb given them. Well, a beekeeper who has but few bees can rear quite a number of queens in his full colonies and no colony need be queenless over five days. It can be done thus: remove the queen, as above stated, and the next night prepare the eggs by destroying those in every alternate cell, and then place the strip of comb in small frames, both sides of which are covered with perforated metal as shown in Fig. 1.

Fig. 2 illustrates the frame with the zinc removed from one side. This shows the top piece of wood, which is convex. The strip containing eggs for queen cells are fastened to the curved or convex piece by hot beeswax and rosin, all of which is done in less than

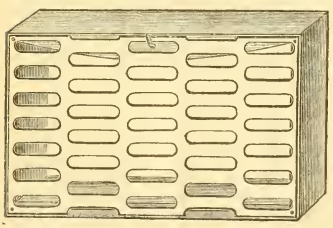

Fig. 2.

half a minute. The bees will build the cells just where the eggs are put. When the cells are sealed or nearly so, the perforated zinc door may be placed in position on the frame and a laying queen immediately introduced. It will not matter whether the cells built on the brood-combs outside the small frame are destroyed or not, as the queen introduced will do so. The queen can not destroy the cells enclosed in the small cages as they are protected by the metal doors, through which the queen cannot pass and the bees will not destroy the cells. When the cells have been sealed seven days, transfer to nuclei or to the queen nursery. By this method one can rear a fine lot of cells and not in the least damage the colonies used for such a purpose, and there is not the least danger in introducing a queen to a colony that has just completed a lot of queen-cells.

We can give several other methods for rearing queens or rather for arranging the comb containing eggs for cells, but the above will suggest different ways for doing so and any intelligent beekeeper can put them into practical use.

One word of advice to the novice: do not practise any method for rearing a large number of queens per colony, but try to rear the best and largest queens. Let your motto be: better, not cheaper queens.

QUESTIONS AND ANSWERS.

QUESTIONS BY S. CUSHMAN.

CONTRACTING BROOD-CHAMBER AND USING DUMMIES DURING SWARMING TIME.

1. If a number of colonies in ten-frame hives have six combs full of brood with honey in the rest and are gaining in stores and will soon be at work on white clover, which is the better plan after removing the four combs of honey from each? To fill up space with dummies and put on sections, or to double up brood, leaving each hive with ten frames of brood and immediately give enough boxes to take all the bees when they hatch?

Do you consider either plan a good one, or is there a better way?

ANSWERS BY G. M. DOOLITTLE.

I should much prefer using the dummies, for if the L size of frame is used, six solid frames of brood will give as many bees as can work to advantage in one hive. If ten frames of brood are given, the sections must of necessity be carried quite a distance from the brood by tiering up, or otherwise, in order to accommodate all of the bees, and bees will not work to as good advantage when compelled to go great distances from their brood. Besides, when the brood hatches from the outside combs, the queen would fail to fill them with eggs again, so that storing in the brood chamber would commence and in so large a comb space below, the bees would now soon crowd the queen in preference to extending their operations in the sections. There is a limit regarding size of brood chamber beyond which we must not go if we would reap the best results in honey. My plan of working is as follows, and this plan I have adopted after an experience of seventeen years of trying all plans and ways devised. I work the brood up to the fullest capacity of the queen, previous to ten days before the honey harvest, which capacity I find to be about eight Langstroth frames as an average. A few will do better, many not as well. Understand, these frames are to be *full of brood*, not part full. When all hives in the apiary are thus filled, the sections are put on, into which the bees will go to store the first pound of honey, for they have no other place to store it. This storing will continue till the bees swarm, at which time, while the bees are out in the air, I go to the hive, remove the sections, take out the frames of brood and the few adhering bees and place them in a light box I have for carrying combs about the apiary. I now place in the hive five empty combs and three dummies, placing the sections back in place again as they were before I took out the eight frames of brood. The swarm is now returned or allowed to return, as I keep all queens' wings clipped, so that they return about as soon as I can get the exchange spoken of above accomplished. I next take the eight combs of brood and place them in an empty hive where I wish the colony to stand, and the next day give a just-hatching queen cell or a very young, virgin queen to them. They feel so poor both as to honey and bees at this time, that they are glad to destroy their own queen cells for the young queen, so that all after swarming is done away with, and in ten to twelve days we have a laying queen in this hive together with a strong force of bees of an active age.

The sections are now put upon this hive, and if the honey flow holds out a few days longer, look out for sections full of the nicest kind of honey. In twenty-four days, young bees will be hatching plentifully in the hive where the swarm was returned, at which time I go and take out the dummies and fill in the centre of the hive, three empty combs to take their place. This is done for a three-fold purpose, first, and foremost, to keep the bees from swarming again as these five combs of brood give a large increase at once; second, to give the queen room of a fresh nature so she will place her brood in the centre of the hive; and third, that sufficient room be given for a winter's supply of honey from the fall flowers, so that feeding need not be resorted to. It will be seen that my aim has been to get all the honey possible in the sections in the height of the honey season and, later on, both honey and bees in the hive for winter.

FINDING A QUEEN.

QUESTIONS BY NOVICE.

1. What is the best and quickest method for finding a queen in a full colony of bees?

2. Is it not more difficult to find a virgin-queen in a full colony than a fertile queen? Please give the best methods for finding either a fertile or an unfertile queen in full or nucleus colonies.

ANSWERS BY DR. G. L. TINKER.

1. To find a queen directly, open the hive very quietly and without smoke. The queen will be found, as a rule, on the comb or combs, in which are seen the fresh laid eggs, and they will be the guide to her presence. But if a jar be given to the hive, or the light be admitted too suddenly, the bees and queen will be excited, when the latter will run from comb to comb and perhaps be found on the outside of the last comb. Smoke, especially with black bees, generally causes the queen to run off from the combs on to the side or bottom of the hive, where she is found with difficulty. In searching for laying queens, it is only necessary to scan the portions of the comb containing the brood, and the lower por-

tions of the frame. We almost never find them above on the sealed honey, unless they have been frightened.

2. Yes, it is most difficult to find a virgin queen in a full colony, and it is not infrequent to overlook one in a nucleus. Where we are at all uncertain, we examine them again in two or three days; especially if the examination is made in the afternoon when the queen may be out. Virgin queens are very sensitive to the light, and sometimes skip from comb to comb so rapidly that we may be easily deceived as to their presence in a hive. Fortunately, it is not always necessary to look for them. If we find an open queen cell with a circular cut at the end and there has been no recent swarming, we may be sure of a queen being present, and may proceed to cut out other cells. If two or three queens have hatched, and we simply wish to prevent after-swarming, it is only necessary to cut out the cells containing queens or queen larvæ. *It is the presence of one or more queens piping in the cells that causes all second swarms.* If a half dozen queens hatch out at once, and the remaining cells are cut out there will be no swarming.

A search for the hatched queens will likely result in a failure to find more than one, unless we happen upon them very soon after they are hatched. The bees will soon select the queen of their choice, and the others be either killed by the most active queen, or be driven out of the hive by the bees, or go out from cowardice. But if yet in the hive and alive, they are often found hidden in the cells, when we may see their long bodies projecting out of them. If a queen has crawled into a cell to hide, she is a coward, and it is difficult to save her. She must be put into a nucleus hive with comb and bees and perforated zinc placed over the entrance for a few days, until she is reassured that she is in no danger, else she is certain to leave the nucleus in fright.

With Mr. Heddon's shallow brood-cases, we may easily shake out a laying queen upon the ground in front of the hive. Probably this is the quickest way to find a queen, but it should be remembered that if there are queen cells in the hive unless nearly mature, that the shaking process will kill the queens.

QUESTIONS BY OLD BEEKEEPER.

CHANGING QUEENS.

1. At what age should a queen be superseded? If a queen is very prolific the second year, would you advise changing at the end of the season say early in September, or would it be best to change ten days later?

2. Considering the low price at which queens can be purchased, would it not be an advantage to change all queens at the end of the season?

ANSWERS BY G. W. DEMAREE.

The longevity and usefulness of the queen honey bee depends largely on how well she has been developed by her nurses in the process of bringing her up. A queen may be hatched in nine days from the time the nursing bees commence their work with the view of developing a queen from larvæ chosen by them, or the time may be extended to thirteen days; all depending on the age of the larvæ when the process of queen-rearing begins. All this variation may take place and does take place in every condition except when the apiarist directs the bees by giving them larvæ of his own selection to rear queens from.

With all this variation in the development of queens it is impossible that they can all be good alike, or that all can be good at all. Hence, in my judgment, in the light of my experience, no uniform rule as to the proper time to supersede queens can safely be adopted. In my apiary each queen must stand upon her own individual merit, and she "stays" or "goes" in accordance with her worth or worthlessness. Pedigree, all things else being equal, has much to do with the toleration of old queens in my apiary.

But when we come down to the *gist* of the question, *i.e.*, would it be to the best interest of the apiary in a general way to supersede all queens after doing two years' service we are brought face to face with a subject of very deep interest to all beekeepers? One of the fruitful sources of loss in the spring of the year is old and worn-out queens. Every observant apiarist must admit that he sustains loss every spring to a greater or less extent on this account. From long and watchful observation I am of the opinion that my losses—not of colonies of bees, but losses in actual surplus honey which truly represents cash—has been not less than ten per cent on my profits annually, on account of failing queens at the very time when no remedy can be applied. This loss could be obviated to a greater extent by superseding all queens at the end

of the second season. What an apiary we should have if every colony were headed by a young and vigorous mother in the early spring of the year.

It would require courage, the courage of a firm business man to remove all two-year-old queens, for some of these look at their best at that age and I would hesitate to lay violent hands on some of my superb two year old queens, they always look at their very best when I go to supersede them.

In my locality I have found it best to supersede queens a while before the close of the summer honey harvest, or late in September after breeding has well nigh ceased for the season.

The locality must govern this matter to some extent.

2. To change all queens at the end of the season would well nigh prevent all loss from failing queens. Aside from accident, all loss on this account would be obviated. At the prices that queens can be purchased, it would pay in hard cash to head every colony with a strong young queen.

But we live in an age of sickly sentimentality which stands in the way of enlightened progression.

We have hundreds of bee men who would not hesitate to cheat their customers a little, who become full of pious horror when they hear of bees being used to the profit of the owner though it causes their destruction. Such people will see their fowls and other domestic animals slaughtered and eaten, while they themselves go about full of chicken, hog, and beef, proclaiming against the barbarity of the apiarist who has the consistency and firmness to destroy his bees and queens at times when he finds it profitable to do so. Consistency is said to be a precious jewel, and there is nothing truer.

QUESTIONS BY W. M. MATTA.

Will you please answer the following questions in the next issue of your journal.

1. If a virgin Italian queen is introduced into a colony of black bees and not allowed to meet any Italian drones will it gradually change the whole colony into Italians?

2. If an Italian queen is introduced into a colony of blacks, how long will it take to change them into pure Italians.

ANSWERS BY HENRY ALLEY.

1. If a virgin queen is introduced to any bees, and not permitted to be fertilized she will not change the colony any except as to drones, as after she has been in the hive several weeks she will commence to lay drone eggs, or rather she will deposit eggs in worker cells that will produce drones only. I think the person who makes the inquiry desires to know whether a colony having an Italian queen which has mated with a black drone will gradually work back to pure Italian bees again. No, they will not, until the young queens for several generations meet a pure Italian drone.

It would take but a little while to work all the Italian blood out, or to work all the black blood out and back to pure Italians again.

QUESTIONS BY A NOVICE.

1. What is to be done with a superabundance of pollen? My bees persist in filling their brood combs with pollen from top to bottom; in some cases, leaving little or no room for brood, even though the queens be young Italians.

2. Is it useful for a beekeeper to have a few surplus queens on hand at all times to supply a hive whenever needed? What do you consider the best method for keeping such queens?

3. Is there any practical method for keeping surplus queens through the winter?

ANSWERS BY J. E. POND, JR.

1. I do not fairly understand this question. I have never found in my experience a superabundance of pollen; in fact, I have never found that more pollen was gathered than was worked up into brood. I should say on first thought that the fault was with the queen, as I cannot conceive it possible that a fairly prolific queen, in a hive having cell room enough for her laying powers could be crowded out by excess of pollen. If, however, the queen is all right, the trouble may be rectified by removing the frames filled with pollen, substituting empty frames, with starters of foundation. This would induce the bees to make comb, and the cells would be filled with eggs before they are drawn out sufficiently to be used for pollen. The comb filled with pollen can be emptied thereof, or can be laid by for future use. I must think, however, that a change of queens will remedy the difficulty. Queens, al-

though young Italians, are not always fairly prolific. If honey is being gathered rapidly as well as pollen, the interior of the hive may be enlarged, and more cell room for brood given. If I found the queen was prolific, I should work the combs in the brood-chamber, just bee-space apart, as bees won't seal up brood in deep cells, and don't like to store honey or pollen in shallow cells. At the same time, room should be given in the surplus department for stores, both of honey and pollen. If this will not rectify the matter, then break the colony up into nuclei and run for a new strain of bees.

2. It is useful to have a few surplus queens on hand at all times, whenever needed. The first part of this question does not need an extended answer, as it presumes a much desired state of affairs. Queens may be kept easily and safely in one of two ways, and the conditions of the case will determine which should be chosen.

They may be kept in nuclei, and when desired to use for increasing the number of swarms, it perhaps will be the proper way to keep them. When kept to supply losses, to supersede failing queens, or for purpose of changing from one race to another, they can best be kept in one of Alley's nursery frames. This frame is so constructed that it can be filled with queen cages, and when desired a number of surplus queens can be kept in a colony by inserting the frame of cages therein. I have had but little experience in this direction, but have found it to work well in the two or three instances I have tested.

3. I do not know of any practical method for keeping surplus queens through the winter, and cannot see that anything can be gained by so doing. If all old queens and those whose powers are suspected of failing, are superseded with young and vigorous substitutes, before winter preparation is made, there should be no necessity for attempting to keep any surplus queens over. The reasons for this are many and various; and if given in detail would call for a complete exposition of the wintering problem, and the matter also of spring dwindling. I have wintered three-frame nuclei safely on their summer stands for the purpose of preserving surplus queens, and know of no better way of doing the same. I do not, however, consider it a "practical method," if by that term is meant a safe and economical plan.

QUESTIONS BY E. M.

1. Why do many persons, even in New York, and especially why do some in New England, engage in the business — if it is a business—of producing honey? In this country, and I suppose that in most countries, there is one, and only one, inspiring influence to exertion. It is the dollar and a half supposed to be just ahead, but the evidence on both sides of us shows, or seems to show, that honey, when it sells at all, sells slowly, at low prices. Why, then, does any one produce it?

Good talkers seem able to sell bees and queens at large profits, and I suppose that beekeeping supplies sell at a reasonable profit, at least.

2. Do the multitude produce honey because they are persuaded to do so, and simply to furnish a market for these things?

3. Are not all the bee journals in this country published by dealers in bees, queens and supplies? I do not know that they are, but why should they not be?

I am ignorant, of course, or I would not ask such questions, and in fact, I do not know a queen bee from a male wasp. But, if there is a little money in it, I can sit up o'nights to learn.

I have seen a number or two of your journal. Yours is the best bee journal in this country, is it not?

New Haven, Ct., July 7, 1886.

ANSWERS BY THE EDITOR.

1 & 2. A majority of people who engage in beekeeping are induced to do so simply for the dollars and cents derived from a well conducted apiary. There are, however, but few people in any state who devote their whole time to bee culture; in fact, but few people can make the keeping of bees, as a business, a success. Even were more disposed to engage in such business, the locations are not numerous where beekeeping could be made profitable. A large majority of those who are interested in beekeeping are farmers and mechanics. An apiary run with care will give a good return for the money invested. Not only does such business furnish some income, but the mechanic finds pleasure and recreation as well. The keeping of a few bees is a most interesting and fascinating study, and few who once engage in it, even in a small way, ever give it up. If you are a mechanic or a merchant, by all means keep a few bees.

3. Yes, all the bee journals are published by supply dealers. If they were not, there would be no bee journals published, as no bee journal could live one year unless it received other support than the subscriptions sent in. We have been through the mill and know all about it. When the "Apiculturist" started it had no supply business attached to it and the beekeepers who did so much howling about the bee journals on account of the supply connection, were never heard from so far as rendering the "Apiculturist" any assistance. I would like to ask our friend why it is that beekeepers will not subscribe for and better support the bee journals?

Now that the "Apiculturist" has a supply business connected with it, it is on a good footing. We had either to go into the supply business or shut up shop.

Of course the "Apiculturist" is the best bee journal printed in this or any other country. Just say so to your friends and get them to subscribe for it.

BEEKEEPING FOR MECHANICS.

QUESTION BY MECHANIC.

Mr. P. R. Russell:

As you are a mechanic, and a most successful beekeeper, will you favor the readers of the "Apiculturist" with your opinion as to whether it is advisable for the average mechanic to engage in a small way in bee culture for the purpose of furnishing his own table with honey, and also a little ready cash by the sales of the products of his apiary?

ANSWER BY P. R. RUSSELL.

I see no reason why a mechanic should not keep a few colonies of bees with pleasure and profit, provided he is properly situated. If he is obliged to be away from home all day, it is certainly very desirable to have some member of the household who is qualified to look after them a bit in his absence; such as taking care of swarms that may issue, etc.

If a mechanic can get no assistance from his family, he may still keep bees in a small way with success, by the aid of the Alley drone and queen trap combined and artificial swarming. Many mechanics have to pay rent, or interest on a small mortgage, and having but a small area of land, still would like to keep some sort of stock that would be a source of income. To such, I would say, if you have room enough to keep fifty hens or a cow and pig, you have room enough to keep fifteen or twenty hives of bees, and the bees when rightly managed will pay better than the cow or hens, and with less care and attention, and the income from them will go a long way towards paying the rent or interest money.

I know what I am writing about because I am a mechanic myself, and work every day in the shoe factory, a mile and a half from home. I live just on the eastern boundary of the city near the woodlands, and have only about 7000 feet of land on which is a cottage and a small bee house, 16 × 20 feet. Near neighbors all about, and yet I manage to keep from twenty to forty colonies of bees with profit, and have done so a good part of the time since 1867.

I admit that I am not located just as I would like to be. I am too near the ocean, have a poor bee range, and the honey gathered is not first quality. I am too near the neighbors, and I ought to have more land. But with all these drawbacks, I have no idea of giving up my bees. I have sacrificed my hens and strawberry beds to my bee interests, because they pay me better on a given amount of capital and labor.

I have thus far been able to sell all my honey and beeswax at retail in the home market, without making any special effort. I have sold none to grocers for several years past.

I am indebted to Mrs. Russell for valuable assistance in the apiary. She can hive the swarms in boxes as they come out and help in many ways, although she never attempts the examination of hives.

I think there are few persons, if any, about here who could get a good living these times by making a specialty of beekeeping. That time seems to have gone by I fear. But that they may be made to pay a reasonable profit in connection with other business, I have not a shadow of doubt, for I have tried it and know by experience.

Your correspondent, L. E. Burnham, writes that he had a swarm of bees, May 20, which he claims to be the first in this part of the state. I think there are others who can "cut under" him, and I would like to hear from a few of them. Your humble servant

had a fine swarm come out May 16 and sold them the next day.

Lynn, Mass., July 12.

[We know of several swarms that were hived as early as May 9.—ED.]

SELLING HONEY IN SMALL PACKAGES.

QUESTIONS BY SMALL BEEKEEPER.

1. What size package of honey sells the most readily?

2. Which is the better receptacle for packing honey, wood or tin?

3. What is the best method to dispose of honey? Do you peddle from house to house, or sell to grocery men?

4. What are the average prices obtained for honey in small packages?

ANSWERS BY J. H. MARTIN.

In answer to the above questions, let me say that I have had but little experience in packages smaller than 1-lb. If honey is put up in pails from 1 to 5 lbs. in a pail, the small pails will generally be sold first, but we prefer a pail not smaller than three lbs. For a very small package, a five cent package would be most popular.

2. Tin.

3. It is better to supply some good, reliable live dealer. Keep a supply in his store at all times. In peddling from house to house you have much travel and few sales generally.

4. The 1 lb. pails sell for twelve cents net; the five cent package would make the honey net about eighteen cents, but the cost of the package and time in putting up, labelling and putting in cases of a dozen each, will not pay, unless put up by cheap help and thousands at a time.

QUESTIONS BY W. B. BAKER.

If an Italian queen mates with a black drone will her drones be black?

Please give a chapter on increasing bees.

Ans. No, the drones will not be black, nor will their color be changed from what it would have been had the queen mated with a yellow drone. However, it is an unsettled question whether the drones from an Italian queen that has mated with a black drone will produce pure Italian bees, while I would not use the drones from a hybrid queen in queen-rearing, however handsome and well marked they might be, I am of the opinion that they would produce pure bees. This statement is based upon the fact that a queen can lay drone eggs whether she is fertilized or not.

Mr. P. R. Russell, of Lynn, Mass., will, by and by, favor our readers with the best and most practical method for increasing bees by dividing up. Last season we purchased nearly his entire apiary and supposed we had about cleaned him out. This season we wrote him for bees, and to our surprise he replied that he could spare twenty colonies. He sold us twenty-six of as fine colonies of bees as could be found in the country. "How to increase from five to fifty" will be the subject of an article from Mr. Russell by and by. Mr. Russell is one of the most scientific and successful beekeepers in the country, and when he sends an article to the "Api" you should read it carefully, as he is no "green-un" or novice at the business.

Canton, W. Va.

MORE LIGHT WANTED.

QUESTION BY A. M. WILLIAMS.

Professor Cook says that what will poison the higher will poison the lower animals. Is this a rule that we can depend upon? Is it true that what will poison a man will poison all other creatures, as man is evidently the highest of created beings? The professor reasons that a bee could not carry poison into a hive without being itself poisoned. We learn then that a bee cannot take poison into its system and live. There is no poison then in the bee. I once thought when I was stung by a bee and it made a swelling that there was a poison injected in the wound. This must be a mistake, and the trouble all made by the mechanical effect of the little dart. The bee cannot extract poison from a plant and it is not probable it has a poison-factory within itself. If the rattlesnake carried poison in its system it would get poisoned, for what will poison a man will poison anything else. That serpents carry poison is an old whim. It is said by hunters that quails and partridges eat berries that are deadly poison to human beings, but this must be a mistake. Mr. Editor, can you give us some light on the subject?

Central Park, N. Y.

REPLY BY PROFESSOR COOK.

EDITOR APICULTURIST:

DEAR SIR:— I am very glad to accede to your request, although I had thought I should never reply to Mr. Williams again. I have thought it a very questionable policy to talk or write about poisonous honey, when we all know that it is at least of very rare occurrence, and so not a practical question, and it seems to me that we may say, at least, that there is some reason to doubt its existence. We are all apt to make mistakes, and in such a matter it would not be strange if even careful people were misled, and so formed a wrong judgment. It certainly must injure the sale of honey if papers are constantly calling attention to it as often poisonous. I know of ladies who will eat no fruit or vegetables canned in tin vessels, as they have read that such were sometimes poisonous. I wrote to this effect in some of the papers, surely in a courteous way, when this Mr. Williams felt aggrieved and has seen fit to write as I would certainly never write of any one. Kind and fair criticism is always in order, vituperation never. So far as I know, it is true that any substance that poisons the higher animals, or man the highest of all, will also poison animals of a lower order. It is possible that a bee could carry poison to the hive and not be poisoned, though I think there would be danger. If the poison should be absorbed it would certainly poison the bee; this would be done if the poison were digested and absorbed by the bee. We know that bees do partially digest nectar while *en route* to the hive, so we have reason to believe that any such poison as arsenic, strychnine, etc., if mixed with the nectar, would be absorbed and kill the bees. There is certainly poison in the venom which we receive with the sting of the bee, yet this is not taken with the food. There are glands at the side of the poison sack which take elements from the blood and form this poison. We say the poison is secreted. There is a curious fact about animal venom. While very poisonous when injected into the blood, it is perfectly harmless when taken into the stomach. All know how cruelly the bee venom hurts, yet when eaten it does no harm. Of course, a bee could take poisonous nectar from plants if it exist. The fact that they do so, so very rarely, if ever, may make us doubt if they ever do it. That they have a "poison factory" inside their bodies we all know positively.

Surely if a rattlesnake should receive its own venom into its blood it would be poisoned. We can eat such venom safely, but once in our blood, and we are seriously if not fatally injured. I have no doubt but the same would be true of a rattlesnake or a bee. The venom of serpents is kept carefully in a safe, close sac till needed for use. It is not in the snake's blood but like the venom of the bee is secreted by special glands. As the bee's venom would kill the bee if injected into its own blood, so too would the snake's poison.

The story about quails and partridges needs investigation. Yet it may be true. It is possible that these birds would not absorb the poisonous element which other animals would, or in digesting the berries, they might modify the poisonous element, which other animals would fail to do. Now, Mr. Editor, the point I make is, that because some one has colic after eating honey, we should not say to the public that honey is poisonous.

[When the above question was sent to Professor Cook for reply, we did not know that there had been any controversy on the subject between the two gentlemen whose names are connected. However, as our correspondent has called for more light, we are pleased to have him get all he desires. In our opinion, he has it in the reply of Professor Cook. Here the matter must end, as we need our space for something more important.—Ed.]

QUESTIONS BY ESAU RUSSELL.

1. When does a queen stop laying drone eggs naturally, that is, if let alone?

I have a young queen that laid two frames of eggs in foundation nearly two weeks ago and they fail to hatch. They are the first eggs she laid. The queen is a Syrian. Why do they not hatch?

ANSWER BY HENRY ALLEY.

Queens usually cease laying drone eggs just before the honey flow stops. They will commence to lay drone eggs again in August. Occasionally a queen may be found whose eggs will not "hatch." The cause, of course, must, be in the queen. While such a queen may in all appearances be perfect, so

far as health is concerned, her powers for reproduction certainly are imperfect.

We once reared queens from a fine "breeder," or what we supposed would be a fine queen to breed from, but none of the eggs from one of her daughters would "hatch," though the mother was a very active queen and her colony one of the best.

We shall have to refer our friend to some one of our readers who can better explain and answer this question.

EDITOR AM. APICULTURIST:

1. Will you get Mr. Manum or some one who raises honey largely for the market to advise the small beekeeper as to the best method for packing, shipping and disposing of his honey. You know the small beekeeper does not have a carload to send to market, consequently it does not pay him to make a trip of 500 miles to sell the products of his apiary.

2. Is it not better to sell for cash, even at two cents less on a pound, than to leave the honey with a commission merchant?

3. What month of the year is best to market section honey?

SMALL BEEKEEPER.

ANSWERS BY A. E. MANUM.

1 and 2. The above questions are rather difficult ones for me to answer, as it calls for my views and advice for small beekeepers to follow in disposing of their crop of honey.

Inasmuch as what might be advisable for *one* to do, it might not be advisable or perhaps possible for another. There are some beekeepers so favorably located that they can dispose of their honey in their home market at much better prices than they could realize in our large markets, while others have no home market and they must ship a long distance to find a market and some of this class are also a long distance from any railroad station, hence necessitating the hauling of their honey on wagons over rough roads and at great risk and expense. To such I would say if the quantity is small to *sell* at some price to those who have enough to pay for the trouble of marketing, after, however, selling what they can to their neighbors. In fact, my advice to all beekeepers whether large or small producers, is to sell all they can at home and to keep enough on hand to supply the demand throughout the year, because our large markets have of late years become so glutted and overstocked with honey shipped to them from all over the country, even in large quantities from California, that it is sometimes very difficult for small producers to get the highest price for their product, unless their honey is first-class and put up in the most attractive style; and even then large producers will usually be favored, because commission merchants will make a greater effort to please large producers in order to hold their trade. This is quite natural and it is business (so termed).

I say it "sometimes" happens so, though not *always*, as I have seen some small lots bring as high a price as that from large producers. This was owing to the fact that buyers took a fancy to the particular package of these small lots and there being about the quantity they wanted they would buy it in preference to any from large lots. These preferences happened some years ago when there was a great difference in the size and style of packages; then they varied from the 1-lb. section to the 4-lb. box. But now the greater part of the honey is in 1-lb. sections and as nearly all beekeepers take great pains to put up their honey in attractive shape, there is not so much difference in the appearance of the different lots as there used to be. Hence my advice, as above stated, that the small producers should either sell at home or let the large producers handle their honey for them *as their own;* then the dealer can hold the honey and take advantage of the market. Having had experience, the large dealers ought to know best how and when to dispose of their product, while on the other hand, the small producers will ship to commission men and being afraid and suspicious that they may get cheated out of their pay, they will not allow the merchant to hold the honey for a good price, but will urge him to sell at *some* price, which he will do, perhaps for two or three cents less than the real market price; then it is soon circulated around that honey has dropped and down goes the market for the entire season. It will, therefore, be seen that if the entire crop of each county was handled by one man, it would be better for all concerned. I know this by experience, as I have handled honey for some of my neighbors; sometimes I have bought it and at other times I

have simply handled it for them, and I believe in either case it has been to their entire satisfaction. I find it not only safer (against breakage) to ship in large lots, but, by having our crop handled by as few commission men as possible, tends, I believe, to keep the price up. I have always shipped my honey to commission men and I have no fault to find with any of them, as I believe they all try to do the very best they can—if *let alone* by the producers.

3. As to the best month in the year to ship I will say that my experience teaches me that the last of September to the middle of October is about the best time to ship comb-honey, because at this season the markets are nearly clear of small fruits, and honey seems to take their place better than anything else, and besides, the weather at this time of the year seems to be more suitable for the shipping of comb-honey than warmer or colder weather.

The time has arrived when, in order to find a ready sale and realize a good price for our honey, we must have it put up in attractive shape.

My method is to use none but pound section-boxes, and, before shipping, the sections are nicely cleaned of all propolis, after which either wood or glass sides are put on to protect the honey. The honey is all assorted and I usually have three grades, first, second and third, each grade packed by itself and sold under different trade marks. This I find advantageous, because if there is *one* section of the third grade put into a crate where the others are all first grade and marked as first grade, this one section will lower the price of all the first grade in that particular crate down to the price of the third grade; therefore we should all grade our honey very closely. To illustrate: last year I allowed some of my help to assist me in grading my honey, and as they were not as particular as they ought to have been I lost money by it, besides receiving during the winter some letters that were not altogether pleasing to me.

I find that to suit the market best our honey should be crated in nice, clean, well-made crates, holding twenty 1-lb. sections and should not weigh over twenty pounds net and even a little less than twenty pounds seems to suit better. On one end of each crate should be marked with a stencil plate the number of boxes it contains, also the net weight and the initials of the shipper.

Therefore, to sum up my answer to the above questions is: to sell at home, if possible, even at one or two cents per pound less than it would sell for in large markets, as it costs from one to two cents per pound to ship and pay commission.

2. Get your honey in as attractive shape as possible, and if to be sent to market ship it during September or October.

DOUBLE-WALLED HIVES.

1. What advantages has the double-wall hive over the single wall, taking into consideration the entire year?

2. Do you not find in the end, the former much the cheaper and better if bees are to be wintered upon the summer stands.

BEEKEEPER.

ANSWERS BY D. D. MARSH.

1. A single-wall hive is very good during the summer months, but it must be shaded from the hot sun, and it must be packed for winter. A double-wall hive is complete at the outset, having protection from extreme heat and cold in itself. If bees are wintered out of doors, it requires no extra packing in the fall; and not being so easily warmed by the sun, the bees are not tempted out on unsuitable winter days. I prefer a brood chamber set loosely within an outer case; then it may be filled in between with chaff, or in this climate left without any packing between the outer and inner case. The outer case may be set aside in the summer if one wants a single-wall hive, though I prefer a double-wall hive all the year. I am convinced it helps honey capping and comb-making during cool nights in summer.

My hives are all double-wall, and I like them better and better. Mr. Alley has invented a double-wall hive which is reversible and which exactly fills the bill.

While Heddon puts a set of closed-end frames inside of a brood-chamber without any bee-space between, Alley lets the ends of the frames serve as the ends of the brood-chamber, and closes the sides with boards clamped on with thumb-screws. Thus Alley's is simpler and attains the same objects.

2. A double-wall hive may be a little more costly at first, but if one expects to winter his bees out-doors, it is the cheapest in the end.

NOTES FROM THE BAY STATE APIARY.

OUR BREEDING QUEENS.

MAY 1st we selected the queen mother from which we intended to rear queens the present season, and transferred her to a small hive having five-frame, 5×5 inches square. This queen was selected because her colony had wintered the best out of the fifty-nine placed in the cellar. This particular hive was full of bees, the combs nice and bright, and the bees were the first to carry in pollen; in fact, it was the most active colony in the yard. The bees are large and beautifully marked, and the queen one of the best we could select for breeding purposes. About the 20th of May, the hive from which the queen was taken was opened to see if all was going on well. We then saw that a good choice had been made in selecting such a queen for a "breeder." Although the weather had been unfavorable for bees during the month of May previous to the 20th, this hive was nearly solid full of new honey, and to-day there is not a hive in the apiary so heavy in stores.

In selecting a queen to breed from, we have always made it a point to select the largest, most prolific, and one whose bees were fine honey-gatherers, provided the worker progeny of such a queen are purely marked.

In this particular queen we have combined every good and desirable quality. Up to date not less than seven hundred daughters have been reared from her, and a finer lot of queens have never been shipped from any apiary, as our customers testify. I value such a queen at no less than $100.

On Thursday, July 1, just before dark, I went to the hive containing my $100 queen to get some eggs for cell-building. When the hive was opened not a bee could be seen, all had decamped. The day the bees left I was away from home, but when I returned, my wife said a swarm of bees was seen going across the garden and orchard, but before she could get around the trees they had disappeared from sight. I next heard that a man had chased them about a mile towards a large swamp thickly covered with trees. Of course I did not expect to see them again, although I offered the man who chased the absconding bees $10, if he would find them, which he tried to do, but without success. On Sunday, July 4, a neighbor across the road said he saw some bees trying to light on a grape-vine in front of his door, but did not know where they had gone. Our "better half" who is always on hand on such occasions, began a search for them, and soon reported "here they are," and sure enough, there they were only a few rods from my house. As soon as I saw the bees I said, "here is my $100 dollar queen," and so it proved to be. That is what I call "good luck."

The bees had merely been on a lark, and when they had had all the vacation they desired, they returned. You can bet that particular queen will not get another vacation this year. Although I have plenty of fine queens in my apiary, I have none equal to this one for a "breeder," and had she not returned, my queen-rearing business would have received a serious set-back.

WAX EXTRACTORS.

RENDERING WAX FROM OLD COMBS.

THERE are a dozen or more different style wax extractors in use.

We have used three different kinds, none of which have worked satisfactorily, as they will not extract over fifty per cent of the wax. Then the process is so slow that one gets out of patience before the work is half done.

For nearly twenty years our better half has had a job to "try out," or boil out wax from old comb, and the pieces that usually collect where bees are kept in large numbers.

Of all the methods yet tried, none has worked equal to the following: we take a boiler, such as is used by the women for boiling clothes on washing day, and place therein several gallons of water and heat until it boils. The next thing is to have a bag at hand made of strong, coarse cotton or linen material, called here "strainer" cloth, large enough to hold nearly two bushels and long and narrow in shape. This is filled with old comb and as much of it as can be put in at one time. The bag is then thrust into the boiling water. And a large pine-wood stick is used to "punch" the bag while the water boils and softens the dry comb, at the same time twisting the top end of the bag to force its contents into the smallest compass. Then the bag is refilled with dry comb and so on until quite a quantity has been melted. At this point some cold water is put into the boiler to reduce the temperature of the water below the boiling point, and then the wax is dipped off into a vessel of cold water. When the water has boiled some fifteen minutes or longer, the soft comb is forced into the bottom of the bag by twisting the cloth. The bag is then removed and while some one holds it directly over a vessel of cold water, another person uses a large pair of wooden squeezers until all the wax that can be is pressed out. The dregs are then removed from the bag when the same process of boiling is gone over again as at first.

The next move is to get the new wax into cakes, which is done by melting again. Put at least two gallons of water into a boiler and place the crude wax in it, and when it is all melted, let it cool. All the coarse dirt will be found on the bottom of the cake of wax and may be easily removed by using a large, sharp knife. The wax may then be melted again and run into small cakes in sizes to suit the fancy.

Bear in mind that the more the wax is heated the darker the color; use only sufficient heat to melt it.

We do not claim that this is the neatest way to remove the wax from old comb; in fact, it is a sticky, dirty mess. It is about all the stuff is worth to get it into salable shape. We have no trouble in getting the work done, however, as our better half is rewarded with the money realized from the sale of the wax to use as "pin" money.

EDITORIAL NOTES.

"THE APICULTURIST."

The reader will notice that the name of P. H. Morant & Co. no longer appears on the cover of the "Api." I wish to inform our readers that the journal is under the same management that it has been since Mr. Locke retired. While Mr. Morant was the owner of the Apiculturist, he has never written one word for its columns, or had anything to do with its management. Mr. Morant never had any experience with bees, and as he cared nothing for the business, he thought it best to retire.

While this enterprise is not a money-making business, the re-

ceipts by way of subscriptions and advertisements are sufficient to pay all bills and future liabilities of the concern, and the Apiculturist will continue to appear from month to month as it has for nearly four years past.

We invite all to send in articles for publication, or questions for answers, and thus help to make the "Api" one of the best bee-papers published.

The "Api" will be conducted in the interest of the beekeepers, and the editor will from time to time express his opinions without fear or favor.

HENRY ALLEY,
Manager.

THE REVERSIBLE HIVE.

One season's experience with the reversible hives has satisfied us that there is no advantage in such an arrangement over the common frame except to prevent swarming. The idea that by reversing the combs the bees will remove the honey from the brood-chamber to the sections is mere theory. We reversed several hives to test the matter. After several weeks, some of the capped honey at the bottom of the frames was removed, but we had no idea that it was stored in the sections, as at the time of reversing, the bees were at work on white clover, and the honey in the brood-chamber was gathered from apple and other fruit blossoms. Any experienced beekeeper knows that bees will not mix different kinds of honey. In all probability the capped honey was used in brood-rearing or to make room for brood.

Notwithstanding the above experience, we really believe the reversible hive is *the* hive for all purposes. The fact that such an arrangement gives the apiarist full control of swarming is all the inducement the live beekeeper needs to adopt the reversible method. No one should think of using a reversible frame, as such an arrangement is as far behind the times as the box hive is behind the movable frame.

There is no style hive in use that can be made so easily and cheaply as a reversible hive, and this one fact alone should induce all who intend to purchase new hives to adopt the reversible arrangement.

Of course the hive need not be reversed except when necessary or desirable, therefore one need not be afraid to use it.

Then, we now have a reversible section-case, which is as useful, as cheaply and easily made, as is the reversible hive. The section-clamp we devised is merely two pieces of boards for sides in which any number of sections are placed and all clamped together by a bolt which runs through the middle rows of the sections.

This style hive has other advantages over the common frame hive which we will speak of at some future time.

THE HONEY CROP OF 1886.

The present season has been a very peculiar one. Bees never came through the winter in better condition, and never was the weather more favorable for bees than it has been the past four months. Nor was there ever more forage for the bees to work and gather honey from in any year during our experience in bee culture. Notwithstanding all this, bees have not done as well as usual. The outlook for a large crop of honey never was more promising than at the beginning of the present season.

Unfavorable weather has prevented the bees from gathering

honey; in fact, when the weather is not warm and pleasant there is no honey to gather as the flowers secrete none. We have known seasons when very little or no white clover could be seen, but the bees did well and stored a large amount of surplus honey. This year white clover was very abundant, but very little surplus honey has been stored.

On another page we present reports from many sections of the country regarding the honey crop the present year. They are not encouraging, but we must not expect a large crop of honey every season.

ORDERS FOR QUEENS.

All of our orders for queens are filled. We now have 200 as fine select tested queens as we ever reared. All orders will be filled by return mail, and safe arrival guaranteed. These queens are large, very prolific and handsome. If not just as represented, we will return the money in every case.

One queen $1.50, or three for $4.00.

Address

AM. APICULTURIST.

NOW IS THE TIME TO JOIN THE UNION.—Let every beekeeper send for a copy of the annual report and a voting blank, fill it up and become a member. It is to the interest of every one to do so. The dues are only twenty-five cents a year; and it is intended only to call for one assessment (of $1.00) each year. Apply to Thos. G. Newman, 925 West Madison St., Chicago, Ill., for reports and blanks.

CLIPPINGS FROM ONE OF OUR EXCHANGES.

TO PREVENT ROBBING.—Mr. J. Halter, in the *Bienen Zeitung*, gives his method. By the use of glass over the entrance he deceives the robbers. He says:

After trying the usual methods to stop it, when, owing to extracting, robbing had been going on rather extensively, and these remedies failed, he succeeded in putting an end to it in a very simple manner. He placed a piece of window-glass, about 8x5 inches, in front of the flight-hole, the top resting against the hive, and the lower end about 1¼ inches from the entrance, so as to enable the bees of the hive to go in and out at the sides. The next morning the robbers made an attack on the hive in great numbers, but going straight at the entrance were stopped by the glass. They swarmed in front of the glass, but could not find the entrance at the sides, and very soon returned in disgust. To effectually put a stop to further robbing, the glass should be allowed to remain for several days, until the robbers forget the spot.

[The same device has been used in Bay State Apiary twenty-five years. We seldom found it necessary to protect full colonies against robbing, but nuclei kept in the same yard with full colonies need more or less protection against robbery from their populous neighbors; therefore, we used a piece of glass four or more inches long, and one inch wide, placed against the entrance in such a way that the bees were obliged to pass out at the ends, or one end was closed by a wad of paper, if the robbers were determined to enter. See Beekeepers' Handy Book, first edition, page 60.]

HONEY PROSPECTS FOR 1886.

REPORTS FROM VARIOUS SECTIONS.

Henderson, Ky., July 12, 1886.

EDITOR AM. APICULTURIST.

In answer to your postal, will say that the yield of honey in this immediate section has been poor. The white clover—our chief reliance—has not been plentiful, and what we had did not secrete well. Added to this, there was a majority of colonies which did not breed up well in the early season.

I have been so closely engaged with other matters that I had not the time to give the trouble my attention.

Our honey season is now about over, but we usually have another in the autumn from golden rod and other flora.

G. M. ALVES.

DeKalb Junction, N. Y., July 12, 1886.

EDITOR AMERICAN APICULTURIST.

The honey season in northern New York up to date is a failure. There has been quite a fair amount of clover, but the nights have been too cool for honey. Basswood is in full bloom at this date, but up to date there is no more honey in it then there would be in so much wheat chaff. There will be little or no honey for the city markets from this section this year. Swarming has been the lightest that I ever knew. In my yard of 140 colonies, only eight have cast swarms, and yet a large part of them have been strong enough to send out swarms ever since the first of May.

IRA BARBER.

Hartford, N. Y., July 8, 1886.

The outlook is not flattering for a large yield. It has been especially unfavorable for comb honey; cool nights have had a tendency to keep bees in the brood-chamber. The clover yield has been moderate, basswood is just in blossom, but not one tree in ten is full of blossoms. This means a short yield.

JOHN H. MARTIN.

Rising Sun, Maryland, July 8, 1886.

The prospect for a good honey crop in this section of the country is fair. The white clover is very plentiful and the weather is fine. If a long drought does not overtake us, there will be a good white clover crop, but not an *immense* one.

E. E. EWING.

Hamilton, Ill., July 9, 1886.

Clover crop, 15,000 lbs. Very little hope of a fall crop owing to drought. Lucky if we don't have to feed back in October.

CHAS. DADANT & SON.

Bristol, Vt., July 8, 1886.

ED. AM. APICULTURIST:

Replying to your postal of the 6th, I have to say that the outlook for a crop of honey is very discouraging, as I shall probably not get over one-eighth crop this season. Raspberries, clover and sumach have passed, and basswood is in full bloom but secreting no honey. As this is the last source from which we get any surplus, I shall have to be content with but very little honey. I hear, however, that in other parts of the state a fair crop is being secured.

Yours,

A. E. MANUM.

Forest City, Iowa.

Honey crop good so far. July and August are usually good honey months here. I look for the largest yield I ever had.

EUGENE SECOR.

Lyons Station, Ind.

EDITOR AMERICAN APICULTURIST:

I will give you a few facts in regard to the results of this season's operations with the bees, which have again disappointed our beekeeping friends in this part of Indiana—the eastern central. Our season for surplus lasts about six weeks, usually from May 20 to July 1. Full two weeks of that time was rainy or cool—unfavorable for the secretion of honey. Consequently the sections on the hives are mostly unfinished. Our own crop is most all extracted and will not exceed 4,000 pounds from 70 colonies, or an average of 60 pounds. This is less than ½ crop compared with 1883—our last good honey season—when the average was 203 pounds. The honey this season is of extra good quality. Our principal sources are white and red clover.

To those who doubt in regard to Italians getting honey from first crop of red clover, I will say that from close

observation this year I often saw as many bees at work on the red as on the white clover. Of basswood we have but little, and that yielded no honey this season although full of bloom.

I would be pleased to see more of the Eastern beekeepers attend the Convention of the North A. Society, to meet at Indianapolis in October next. Success to the Apiculturist.

Respectfully yours,

JONAS SCHOLL.

Christiansburg, Ky.

EDITOR APICULTURIST:

The surplus honey crop in Kentucky, and doubtless in most of the middle states will be light this season. In this state the season opened with favorable prospects, though our bees were weak in the spring. Favorable weather brought them rapidly forward, and swarming commenced as early as usual. Cloudy, cool weather with prevailing east winds cut off the white clover yield when at its best stage.

G. W. DEMAREE.

Pine Plains, N. Y., July 13, 1886.

ED. AM. APICULTURIST:

I think I am safe in saying that Dutchess Co. will produce twice the amount of honey this year that it has ever before produced in a single year. There are but few basswood blossoms, yet at this date bees are storing honey very fast, chiefly from white and alsyke clover. There has been a continual flow of honey since June 2d, and it has been almost impossible to control swarming.

Yours in haste,

G. H. KNICKERBOCKER.

CARE OF BEES IN AUGUST.

The apiary needs but little attention this month. In most localities little or no honey is gathered until towards the last of the month, and unless the flow is larger than usual, no section-honey will be stored. Golden-rod will probably yield the largest amount of honey of any of the wild or fall flowers. This honey, when the weather is dry, is of a very fair quality, but during wet weather, it is thin and watery, and when gathered late in the fall is usually left uncapped in the combs, for the reason that the water could not be properly evaporated before cool weather sets in. Result: it sours before spring, runs out the combs and is pretty sure to destroy the colony.

The only remedy is to extract it, but it is hardly advisable so late in the season to disturb the bees.

August is a good month to watch the colonies, when they are at work, and if any have failing queens the fact may be easily detected, and the remedy applied at once.

This is a good time to prepare for winter. Colonies that need much feeding should now be supplied with a limited quantity of syrup. This will encourage breeding, so that when the fall flowers begin to yield nectar the bees will be ready to gather it.

Give plenty of ventilation and shade the hive when so situated that the hot sun strikes them all day long.

WHAT OUR PATRONS SAY.

Perry Centre, N. Y.

I am a beginner in Apiculture. I bought twenty colonies of bees in box-hives and have transferred them, and I found your book ahead of others; clearer, and more plain than anything I ever read.

J. W. SAGE.

San Antonio, Texas.

The traps are doing wonders, and I am pleased with them; will soon require more.

RICHARD GEBLART.

The American Apiculturist.

A Journal devoted to practical Beekeeping.

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For the American Apiculturist.

THE SECRETION OF NECTAR, ETC.

G. W. DEMAREE.

I DOUBT if any branch of modern apiculture is as poorly understood as are the laws that govern the secretion of nectar in flowers. Yesterday my bees were swarming on the bloom of a second crop of red clover, in a field adjoining my apiary. To-day not a bee can be seen in the field. But then the wind has changed to the north since yesterday? Yes, that is true, but in the early part of the season my bees succeeded in finding nectar in the flowers no matter which way the wind was blowing. In the year 1882, although the crop of flowers surpassed anything I ever witnessed in that line, there was no sealed honey in my apiary till the month of August, when we had a flow of honey contrary to all general rules in this locality. But that was an exceedingly rainy season? Yes, but in the season of 1883 our bees gathered honey rain or shine, and gave the heaviest yield of honey ever stored by bees in one season. It rained often that season, and yet as soon as the showers ceased the bees would rush out to the fields and return loaded with nectar.

As a general rule north and east winds are unfavorable to secretion of nectar, but the difficulty in my way is that the same conditions, so far as I can see and judge, do not always work out the same results; hence I conclude that there is something about this matter that we do not fully understand. While speaking of nectar, I am reminded of some things I have seen in print which surprised me very much. Among the apicultural writers of this country we have a few who are able to dive into intricate questions of science. In my candid opinion Prof. Cook stands at the head of these.

He says that honey is nectar mixed with gastric juice; that nectar undergoes partial digestion in the honey sac. I do not intend to quote verbatim. Mr. Cheshire, who claims to be more accurate than any other author, makes a like assertion. It is not my intention to controvert the position taken by high authorities, as I have been unable to demonstrate the truth or falsity of their position. But to my plainly tutored mind the whole thing is a physical impossibility. I believe that all lawyers and jurists agree that a "physical fact" is the most powerful evidence known to the science of jurisprudence. Well, a pound, live weight, of field worker bees may and sometimes do gather from five to twenty-five pounds of crude nectar in ten hours. That a single pound live weight of bees could secrete gastric juice in sufficient quantity to change in any material sense so great a quantity of crude nectar in so short a time is simply a physical impossibility. We hope our scientific brethren will reconsider their startling position in this matter, and give us a posi-

tive decision as to whether bees "make honey" or only gather and evaporate it.

There is something interesting and mysterious about the secretion of nectar in flowers which if we could fully understand we could not remedy, because these things are beyond the control of man.

THE HONEY MARKET.

High prices for honey is at an end; the question as to whether or not bee culture as a business will pay must now be decided in the light of present prices for honey. I tried to hold up the price of honey this season to twelve and a half and fifteen cents, but have had slow sales and shall have to come down to twelve and a half and ten, or hold my stock in the honey house. We have been spoiled with good prices. All groceries rule low now, and we cannot reasonably expect honey to be an exception. A friend of mine, who is a poor man, and who has been a failure financially except in the bee business, vows that he will quit the apiary when honey goes below twelve and a half cents per pound. I think a great many who demand that honey must bring a good price whether times are dull or brisk will have a chance to try their hand at something else. As for myself, I expect nothing else but reverses in any business, and if I have succeeded in business, it is because I have stood firm and worked the harder when reverses came. Those who contemplate entering the bee business may as well understand that they will have to work for every dollar they receive, and if prices run low they will have to curtail expenses and meet dull times and dull sales bravely. Such persons will live happily though fortune may pass them on the other side. Whatever may be said to the contrary the hope of the bee business is bound up in the home trade for honey. In building up a home market the apiarist not only finds new customers for his honey but benefits the trade in honey, and thus helps his brethren.

Christiansburg, Ky.

For the American Apiculturist.

DESTROYING ANTS IN THE APIARY: THE HONEY SEASON IN TEXAS.

MRS. S. E. SHERMAN.

LET me give you my plan for destroying ants, which at times you all know are very troublesome about the apiary and also in the honey-room. I put London purple in the hills: three applications, a week or ten days apart, will effectually destroy them. I have in this way killed twenty-five hills of large red ants in the last two years; also quite a number of smaller kinds. I find that these small, or what I call the regular honey-ants are more numerous around the roots of trees, and are easily killed by sprinkling the London purple upon them around the trees. If they get inside the hives, I sprinkle salt quite freely on them which does the bees no harm and drives the ants away. In fact, I think that bees should be salted frequently through the spring and summer season. When ants trouble me in my honey-room, or about my safe, I simply tie a cotton-twine string that has been saturated in alcohol in which corrosive sublimate has been dissolved around my safe-legs, cans, kegs or whatever I have my honey in. This, however, should be used very cautiously, especially if there are small or meddlesome children around, as it is a *deadly* poison. I have never known an ant to cross such a string.

THE HONEY SEASON IN TEXAS.

I am sorry to have to report that bees have yielded no surplus honey in this part of Texas up to date—July 26, 1886. There are several reasons for this. In the first place last fall and winter were so dry that the seeds of various honey-producing plants failed to come up. Prominent among these are horse-mint and broom-weed, both of which are a complete failure, together with many others of less importance. It is a subject of remark that there are fewer flowers than was ever known before. Last winter was unusually severe, in consequence of which a great many native or black bees in box and log-hives died. My bees are all Italian and hybrid, and wintered safely with the loss of two queens only.

When spring opened and fruit bloomed, bees that survived the winter built up rapidly; and had there been flowers sufficient and weather suitable for the secretion of honey, I should have had a number of swarms in March. As it was, the weather turned out unfavorable. The bees had consumed most of their stores in rearing brood, which in some instances they tore down and dragged out of their hives; killed all their drones and gave up swarming. I had to watch them closely and take from the stronger and give to the weaker; thus by constant care and watching, I have kept them all alive.

A gentleman from the northwestern portion of this county was here to-day. He told me that fully one-third of his bees were dead. He had about forty box-hives of native bees. They have died of starvation this spring and summer.

Salado, Bell Co., Texas.

For the American Apiculturist.

WHAT SHALL THE HARVEST BE IN DOLLARS AND CENTS?

G. H. MARTIN.

Now that the harvest of honey is practically ended, beekeepers are looking for another harvest in the shape of dollars and cents.

It seems probable that the yield will be above the average, but not so bountiful as many predicted in June.

Certain localities in the west have given large yields, while New York and the eastern states will have less than an average yield. Basswood is an entire failure east and I think generally.

Now let us see what beekeepers have been doing to keep the tone of the honey market sound. In this county, and in many other portions of the country, certain producers have seemed to take alarm from early reports in the journals of great yields, and a sudden desire to get rid of their honey has taken possession of them. To be the first in the market, cases of honey have been snatched from the hives before the astonished bees have had time to cap it properly. In June, parties were marketing honey around a neighboring town for ten and twelve cents per pound, telling every person they met what a wonderful yield of honey there was all over the country, thus educating the public to the idea that honey was soon going begging for a purchaser.

While prices will probably be low and sales dull there is no earthly cause for such a "panicky" feeling if each producer would use a little common sense.

Even in this year of so-called bounteous yield there will be thousands of localities where honey will be sold for twenty-five and thirty cents per pound.

Let me give you a few instances in my own correspondence. A friend in Brunswick, Georgia, writes that honey is very scarce in that place; what is sold comes from the north and retails for twenty-five and thirty cents per pound. Another correspondent in Millington, Conn., writes me that it is impossible to buy good or bad honey without paying an exorbitant price. A lawyer in a considerable town in Minnesota, to whom a nice crate of comb-honey in one-pound sections was sent in April (and it was the first pound sections he ever saw), concludes his letter by wishing he had such honey on his table every day.

There is not a state but has just such localities, and there are thousands of people who never tasted honey.

This condition of things should not prevail; there should be a more even distribution of our honey and more salesmen educated for the purpose. We are all the while educating producers while those to distribute are an exception. Let us look at a few instances, where business principles have been applied to the sale of honey.

Charles F. Muth, of Cincinnati, by energy and enterprise, has built up from a small beginning a trade that absorbs tons of honey. His trade not only supplies a large constituency for table use, but a wide field is opening for mechanical purposes.

Jerome Twitchell started in a small way in selling honey in Kansas City. His enterprise built up a large trade which is now carried on under the firm name of Clemons, Cloon & Co. Their sales during the last year were 325,000 pounds. Formerly honey was shipped from Kansas City. Now to supply that and surrounding towns, eleven different states are drawn upon. There are several lesser lights in the sale of honey, but such results as the above show push and enterprise, and if such results can be accomplished in Kansas City, why can not the application of the same business principles build up a healthy trade in any large city?

The uses to which honey is being put are also becoming more varied, and it is to the interest of every beekeeper to aid in the sale of all articles in which honey is an ingredient.

It has been claimed that if candy could be made of honey that this source would take a large amount of our extracted honey.

The good time seems to have arrived when we can feed the candy-loving public with the health-giving product from the bee-hive. Mr. Arthur Todd sends out a full line of candies made of honey and every one who tastes them wants more. Now we feel like booming Bro. Todd's candies and selling all we can. Let every beekeeper open a candy and honey stand at his County Fair and he will enable Mr. Todd to use up tons of honey. In like manner give the honey jumbles and cakes as wide a circulation as possible to the public.

It is not good policy to sit down and lament when you see some one else making something. If you can't make it, then help him sell it. Your profits will come in perhaps in more ways than those of the manufacturer. My plan is for common sense methods of disposing of our products. The harvest in dollars and cents will be such as to cause every beekeeper to rejoice.

Hartford, N. Y.

For the American Apiculturist.

A WOMAN'S EXPERIENCE WITH BEES.

MRS. H. HILLS.

BEES AFFLICTED WITH SHAKING PALSY.

I have had a little experience with the "nameless disease," which I call "shaking palsy." Last season, probably in August, I had a colony thus afflicted. Examining it, I found a little bubbling, unsealed honey, in the centre of the hive; outside of that, good sealed honey. Determined to make sure work, I gave them full combs of best sealed spring-stores, in an entirely new hive. The cure appeared to be almost instantaneous, taking away, as I did, of course, what little brood they had. They built up wonderfully, and this season, the colony promised to be one of my best; and being fine Italians, I recklessly, when a swarm issued, gave two of the queen cells to other colonies. Before long, I was much chagrined to find the disease fully developed at the old stand; of course, among the brood of the old queen. I at once destroyed all the young queens, but determined to keep the old queen, and note results. The disease soon disappeared, and I have seen nothing of it since, in the apiary.

Marketing honey has been an absorbing topic here for a few weeks past. But in close connection with this, and far more important, is the question of winter stores for bees. My best market, like charity, begins at home. Determining to try the experiment of wintering on natural stores, an abundant supply of the best combs of sealed, white clover honey, is reserved for the bees. This first: next comes a supply of extracted honey for all household purposes, for cooking, fruit-preserving, even for table use. No sugar is half as fine, for fresh fruit, for coffee, even, as our beautiful, pure, extracted honey. The very sight of its pure beauty is an appetizer. Well, so much honey has found an excellent market. But there is plenty left; and our honey, having been all tiered up on the hives, until every cell was capped, is all of one quality, except, as it is gathered from different sources.

Preparing the honey for market is the next absorbing topic. To vary the monotony of a retired life, one may have dabbled with unspeakable pleasure, in many studies and employments. Attempting, just for the pleasure of it, to express one's thoughts in strange sounding words: creating, from the flowers, the insects, the stones, that meet one at every step, a new world, replete with marvellous life and beauty. The words "preparing honey for market," sound prosaic enough. But the employment may possess a charm, which, for a time, at least, may exclude everything else. Let us see. First, be sure that the honey, both comb and extracted, is perfection itself; then, a beautiful, plate-glass showcase, with name, etc., in bronze; then the pearly combs, beautiful as in the olden days, in far-off lands; then the liquid gold and silver, in glasses pure as crystal,—and the marketing is already done.

Sheboygan Falls, Wis.

For the American Apiculturist.

HOW TO GET WAX OUT OF OLD COMBS.

IRA BARBER.

THE best way to get wax out of old combs that I have ever found, and one that gets it out the cleanest and with the least labor, is to

take a large kettle (a 90-gallon one is what I use) and put in four pails of water and heat it to the boiling point; then put in the comb as fast as it will melt, until all is in or until the kettle is filled to within about four inches of the top. Stir the mass all the time to reduce it to a pulp as much as possible; keep the fire just hot enough to melt all the wax, but not hot enough to boil, or it would be quite certain to rise and go over. When all is melted so that the comb is well reduced to a pulp, take the fire away and dip off the wax. To do this, I use a basket made of wire cloth, the same wire as we use for queen-cages. It should be about six inches deep, and eight or ten inches across, large enough to dip from with a common dipper. Sink the basket into the mass with one hand, and dip off the wax as long as you can without getting water; then give the mass another stirring when more can be dipped off. I proceed in this way until I get nearly all, when I leave it to get cold. All the wax that I fail to get while hot I find in a thin scale on the mass when cold, and this can be easily taken off and run through the extractor, or, if one has more than one kettle full to make it can be put in with the second lot. The wax should be strained when dipped off so there will be no more bother with it. Cover the dish as soon as you get it full, so that it will keep hot long enough to settle all impurities there may be in it, and also to prevent it from cracking. There is no trouble in getting all the wax in this way if one is thorough in stirring the mass, so that all the wax can float out. I seldom have to renew the fire to get it all. If I have comb enough for one hundred pounds it is an easy job to start a fire and heat water and do all the work after five o'clock at night in May and get the wax out before dark.

All the wax there is in bee-glue can be got out in the same way, except I do not dip the wax off, but let the glue settle and every particle of the wax will separate and can be taken off when cold. To separate wax from bee-glue, I put five or six pails of water in the kettle, and when hot put in the glue and bring to a boiling point, so that all will be melted, and let it simmer for a few minutes, stirring all the time so long as it is boiling, the wax and glue will all float on top and appear to keep together. When you are satisfied that the glue is all melted, put out the fire and let it stand for a short time, then give it a good stirring; if the glue settles to the bottom let it alone, but if it does not, then wait awhile longer before you repeat the stirring. I have sometimes had to wait for an hour after the fire was put out before the water got cool enough to cause the glue to settle. There is more wax about bee-glue than most people are aware. This season I got twenty pounds of nice wax from the glue saved in two seasons from the sections and cleaning up of old frames, hives, and honey racks, and it all appeared to be clear bee-glue and nothing else. Young swarms in June and the early part of July, when bee-glue is scarce, use wax freely in place of glue, then later on when glue is plentiful they coat it over with bee-glue, so that all appears to be glue. It is well worth saving when we have use for all the pure wax we can produce.

De Kalb Junction, N. Y.

For the American Apiculturist.

SYRIAN BEES.

W. M. WOODWARD.

AFTER working the Syrian queens through the clover harvest, I feel prepared to pass an opinion upon them. I like them. They have proved very docile indeed, so much so that I have been able to handle them at all times without smoke. I have held that queen up on a frame before my face for my whole family to see her lay eggs in the bright sunshine.

I do not find them able to work on red clover. The Albinos have done so to some extent, but have proved unprofitable from their great swarming propensities. The Syrians were often seen on red clover, but close observation showed that they only worked down between the bloom and not in it. This is also confirmed by the fact that they were never seen with red clover pollen which is very dark in color, while the white clover is creamy white and sweet clover bright yellow. They are, however, splendid workers on sweet and white clover.

I have but one fault to find with them and that is the way they seal their honey. It is so thin and transparent that light shows through the combs. I have studied the matter some and have concluded that it is owing to their being poor wax producers.

I wish to ask if you observe much difference in them on this point, and to suggest that breeders note this matter and encourage the wax-producing power in them. I am satisfied my blacks will build two combs to their one, though I cannot afford to test that now.

I have reared one young queen to be crossed with the blacks to test whether they are desirable or not.

My Syrians were a mere nucleus in the spring and short of beebread which I was unable to supply; but they have outdone any other colony, their equal on May 1, by one-fourth or more. They have not swarmed, though all my other colonies have but one. They were fifty pounds behind that one in the start, but have gained on it since they began to store surplus. These blacks have stored about one hundred and twenty pounds, the Syrians as much as one hundred, but the latter is not all finished off yet.

Custer, Ill.

For the American Apiculturist.

NOTES FROM CANADA.

R. F. HOLTERMAN.

If the organizing of beekeepers' associations is an indication of the spread of apiculture, we in Canada have ample indications of the rapid spread of this industry.

On Wednesday, August 4, a number of beekeeper of the county of Wellington and vicinity met for the purpose of organizing an association. It was called the "Guelph Central Beekeepers' Association," Rev. W. F. Clarke of Guelph, President, J. Ramsay, Eden Mills, Vice President, and A. Gilchrist of Guelph, as Secretary.

A number testified as to the development of the home honey market. It had been very rapid during the last eight or ten years and no doubt could and would be very much increased.

The advisability of advocating the use of honey for preserving and other sweetening purposes was disputed. The plea to the contrary being it had not the same sweetening power as the best of cane-sugar and the price could not be proportionate; that honey was in itself a

delicacy, which was perfect in itself and required no preserving. Although some valuable ideas were advanced, in my estimation the question in its entirety has not been considered; although we should always hold out prominently the fact that honey requires no additions to make it a wholesome and delicious food, I can see no injury arise from advocating its use as above stated. The man who eats to live still has all the benefit that can be derived from eating honey, although mixed with other food, and the man who more largely takes into consideration his taste still has an appetizing food.

The most interesting part of the meeting was the visit the association paid to Mr. Goldie's grounds to view Mr. Clarke's "Chapman honey plants." There were fifty in bloom, and although late in the afternoon and a cool day, the visits of the bees were continuous and numerous. This and Mr. Goldie's apiary and grounds decorated with shrubs and evergreens were a treat to all.

It was resolved:

That members present find that the "Chapman honey plant" is evidently much frequented by honey bees, whether yielding honey profusely or not; or, if desirable to introduce as a honey plant, we are not in a position to judge.

After the close of the meeting I paid a visit to the apiary of Mr. A. Gilchrist. The apiary consists of some seventy colonies. The increase has been considerably over 100 per cent and thus far the yield, if I remember correctly, 60 lbs. to the colony. The summer in that locality had been too dry.

Mr. Gilchrist besides keeping bees has a nursery and fruit business; he uses a chaff-hive and winters outside and thus far has been very successful. I may say I here saw some Heddon hives in operation and also heard reports from others who were much taken with the hive. Mr. Gilchrist stated he liked the idea very much at first and intended getting a large number of the Heddon hives, but his experience had convinced him it was not what he had expected. He wanted a frame that would make a shallow frame in summer and a deep one in winter. There was also at the meeting a gentleman who had given the Heddon hive a very warm and public reception when it first came out, but who felt by experience bound to say the invention had not come up to his expectations. Our honey crop throughout Canada has been probably two-thirds or less. Linden was almost a complete failure.

Brantford, Ontario.

For the American Apiculturist.

THE CHAPMAN HONEY PLANT.

N. W. McLAIN.

REPORT OF THE COMMITTEE APPOINTED TO INVESTIGATE ITS MERITS.

The Committee appointed by the North American Beekeepers' Assotion to investigate the merits of a honey-producing plant now being cultivated by Mr. Hiram Chapman of Versailles, New York, met at that place the 28th ult. One member of the committee, Mr. Manum of Vermont, was unavoidably detained at home.

Mr. Chapman exhibited a specimen of this plant and made representations concerning its value to beekeepers, at the Detroit Convention in Dec. last, which led to the appointment of a committee which was instructed to investigate and report at the next annual meeting of the Association.

This plant, which Dr. Beal, of

the Michigan State Agricultural College, tells us is *Echinops Sphaerocephalus*, and a native of Central France, is, by common consent, beginning to be known as the Chapman honey plant, thus designated on account of Mr. Chapman being first to cultivate the plant in this country, and first to call the attention of those engaged in bee-keeping to its value as a honey-bearing plant.

The appearance of the plant has been very well described by Mr. T. F. Bingham on page 487 current volume of the American Bee Journal, where he says: "It grows from three to four and half feet high, each root or crown bearing from six to sixteen round buds or heads, from one to one and three-quarters inches in diameter. These heads all stand upright, and the entire surface is covered with small white flowers having bluish stamens." The stalks and leaves so nearly resemble those of the thistle that were it not for the head, this plant might easily be mistaken for the thistle. There is, however, in this particular a very marked difference, the appearance of the head being aptly described by its botanical name, round-headed, and in appearance like a hedge-hog.

The flowerets on the top of the head open first, then they open later along the sides, continuing in the order of nature around the entire surface of the sphere. Near to the stem the last flowerets open, long after the blossoms on the top of the heads have disappeared, and the seed capsules of the first blossoms have hardened. Unlike the thistle the seeds are provided with no balloon by which they may be borne by the wind. The seed is in weight and appearance very like a small grain of rye, is enclosed in a capsule, and falls directly to the ground if not seasonably gathered, not spreading more than oats if left to fall without harvesting. The length of time from the first appearance of bloom upon the tops of individual heads, until the fading of the last blossoms on the lower half of the head near to the stem, is about eight days, the continuance of bloom depending upon the nature of the soil and the season; but the heads or buds, sent out from each individual shoot and forming each individual cluster, vary in age and size, so that the natural term of blooming and honey-bearing may safely be reckoned at from twenty to thirty days. The term of blooming may, however, be prolonged to a considerable extent by cutting back a portion of the plants, and the facility with which the honey harvest may thus be prolonged, constitutes an important feature when estimating the value of this plant.

The plant is hardy, easily propagated and perennial, and appears to flourish in all kinds of soil, and there is no danger of its becoming a noxious weed. It does not bloom until the second season and as it does not spread, its extirpation could be easily accomplished. It may be planted in waste places or it may be sown in drills or hills, like onion seed. It seems to be characteristic of the plant to root out all other vegetation and take possession of the soil. No weeds and but very little grass was seen growing in the three-acre plot observed.

As to the value of the plant as a honey producer, there appears to be no room for doubt, whether quality or quantity, or both, be considered. Within reach of Mr. Chapman's apiary no other resources were accessible for honey gathering, the severe and prolonged drought having destroyed all other honey-yielding blossoms; and yet, in some instances, the bees were making an excellent showing in the

hives. The number of colonies (about 200), foraging upon the three acres in bloom, was however so great that no definite conclusion could be reached as to the probable returns in pounds of honey from a given area. That the returns would be highly satisfactory is evidenced by the fact that the entire area was "alive with bees," and they visited the flowers from daylight until dark, and sometimes eight or ten bees were upon a single head at one time. Mr. Hubbard, who is cultivating some of these plants obtained from Mr. Chapman reported that he had counted the number of visits made by bees to a single head from 5 A. M. to 7 P. M. He reported the number as being 2,135 actual count.

In order that the committee might have some idea of the quantity of nectar secreted in the flowerets of a single head, the day before our arrival Mr. Chapman had wrapped a thin paper about a head, the half of which was in full bloom, and tied the paper around the stem with tape, thus preventing the bees from appropriating the nectar for twenty-four hours. I cut off the tape, and removing the paper held up the ball before A. I. Root, L. C. Root and others; the flowerets were dripping nectar and the drops sparkled in the morning sun, and their eyes sparkled with delight and astonishment. I have made similar tests with like results using the plants which I have here at this station. Mr. Chapman has distributed this plant over a wide extent of country from Vermont to Nebraska and each member of the Committee has been furnished with two-year-old plants for cultivation and observation during the present summer.

All the facts obtainable will be given to those interested when the Committee make their formal report to the Association at the next annual meeting.

U. S. Apicultural Station,
Aurora, Ill., Aug. 5, 1886.

For the American Apiculturist.

MAKING SECTION-BOXES.

C. W. DAYTON.

For a long time I was troubled to get a section box that just suited me. The principal objection I found with the dovetailed-section was its lack of strength. In one instance I remember of dropping about a hundred and there was scarcely a dozen that remained whole, while they were all very much out of true.

The one-piece section was a little better, though many of the corners broke or the dovetails loosened and the thin material made it a hard job to nail them.

On the whole, the one-piece or dovetailed section-box as it is usually made is truly a very frail piece of workmanship.

With the handling of section boxes begins a season of anxiety, which in some instances has been considerably lessened by applying glue at the corners.

What is wanted and what will be a pleasure to handle is a real solid section, one that may be thrown and knocked about without starting at the joints. One thing that is against us when we get a solid section is we are apt to have a heavy and cumbersome section also. In making sections I would have the top and bottom bars narrow and one-fourth inch in thickness and the side bars not more than one-twentieth of an inch in thickness and nail the side bars to the ends of the top bars with three-fourth-inch wire nails two at each corner. This kind of a section is

no heavier than the usual kind but is several times as strong.

When a form is used in nailing them four can be nailed, while five can be put together by dovetails. Hundreds of one-pound sections of honey of this kind I have hauled in a lumber wagon for fifty miles over the roughest of roads and never knew one to get broken.

Another thing in their favor is that they can be made with a single saw and by foot power as it is simply sawing thin pieces from blocks of the right length and thickness. After the saw is filed and set if an oil stone is properly held against the side of the teeth while they are in motion the projecting points will be taken off and then the saw will leave its work as smooth as a planer. If dovetailed or one-piece sections were set down at my door free of cost I should continue to use the ones described so long as I had the time and machinery to make them.

Bradford, Iowa.

NOTES FROM THE BAY STATE APIARY.

HENRY ALLEY.

For four months queen-rearing has been going on as rapidly as we could push it. All of our orders were filled as early as the first week in July, with the exception of a few that were mislaid. August 4, we received orders for 125 queens. We had the queens to fill such orders, but as one of them was a large one and the price offered below what we could rear queens for, it was declined. The next day orders for forty-one queens came to hand and every one was filled by return mail. Some one will say, "Well, Alley did not always fill his orders with such promptness." No, we did not. When we had orders for 500 queens and were having "hard luck" in rearing them, we could not fill orders by return mail. Now, while we are having unusually good success in our apiary, one very prominent queen dealer is having a hard time of it. He writes us thus: "It has been a hard year for breeding queens here; in fact, one of the worst I ever knew. I have been having an experience in raising cells I never saw or heard of before, and I am using the same method (which is practically the same as yours) that I have for years and never failed to get good cells until now. There was a quite a flow of honey through June and all worked well until the flow ceased, and since then about half the queens die in the cells. The larvæ look all right before the cells are sealed, and apparently well fed, and the cells are well developed; but on examination a day or two before the time for the queens to emerge, many of the queens are found dead, some still in the larvæ state, and others nearly matured. Some queens that do hatch are no larger than a worker bee and are, of course, worthless. I am at a loss to know the cause of it."

We advised our friend to go back into the country and get some colonies of bees from the old box-hive men, and also to change the mother bees. If new breeding queens are obtained from some distant apiary, it will be an easy matter to discover the cause of the trouble. In our opinion it is in the queens. There seems to be some peculiar disease that has developed in the ovaries of the mother bee. Some twelve years ago we had a similar experience to a small extent, but the trouble was

in the queen, as we readily discovered as soon as we changed the queen-mother. We know how to sympathize with any one when in such trouble as our friend seems to be.

SYRIAN BEES.

We have reared only about fifty Syrian queens this year, and those were reared late in the season to fill some orders received last fall by S. M. Locke & Co. We do not intend to rear another Syrian, Cyprian or Albino queen, for we find the greater demand is for Italians as they give the best satisfaction. Then again, we do not have the time to run half a dozen queen-rearing apiaries. In a few years all of the new races of bees, except the Italians, will be counted as things of the past. It was all well enough to pass resolutions thanking the man who introduced the new races to this country, but who is ready now to offer a vote of thanks to him "who did so much (?) for us?"

INTRODUCING VIRGIN QUEENS.

We have 250 nuclei or fertilizing hives in working order. One would suppose that we would have no queens to introduce, but plenty queen cells nearly matured to transfer. There are of course hundreds of cells we might insert, but few are inserted as we choose to introduce the virgin queens, for we then know what a hive contains that has a queen, while if a cell is inserted it might not hatch; or, if a queen does emerge she might be inferior or worthless from some cause or other. The time thus lost is of some account to us as a hive you know must remain queenless three days before another virgin queen can be safely introduced. Although some 900 virgin queens have been introduced, not two per cent have been lost, and not half a minute's time was spent in introducing any queen. Our method is to keep about 150 queens in the nurseries at all times. If fifty fertile queens are sent off, fifty virgin queens are introduced in just seventy-two hours later. Thus you see everything goes like clock-work here and we are able to fill orders promptly.

PRICES OF QUEENS.

By consulting our price list you will notice that we advertise queens by the dozen for $10.00. We have not sold over seventy-five queens at these rates. Nearly every customer wants the queens we advertise for $1.50 each.

We have a few dark queens reared from some we were testing that have been offered for 75 cents each or $6.00 per dozen. These were such large and prolific queens that it seemed to us a pity to kill them, and so they were offered for sale at a low figure.

By looking over the columns of some of the bee journals it will be seen that parties are offering queens at $6.00 per dozen. This one fact indicates that business is quite dull with some dealers. By and by, we expect these same people will give queens away for the sake of doing business. We advise such parties to rear better queens, sell for a better price and to rear and sell fewer queens any way. There ought not to be a beekeeper in the country who is not willing to pay one dollar for a good queen; we know that a large majority are willing and ready to pay a good price when they need queens.

For the American Apiculturist.

NICE WHITE COMBS: HOW PRODUCED.

CHESTER F. SAVORY.

THE way I keep combs white in the hives is this: I take and lay thin pieces of sponge over the brood-sections of the hive and cover the sponge with wire cloth on a frame, and as my bees are right in the centre of the hive, I put a thick bed-quilt over the brood-chamber and shut down the cap which is hung on hinges. The bees live all winter splendidly. The sponge absorbs the moisture, so the comb is kept clean and white. The combs in my hives are one year old, and as clean and white as if they had been made this year.

Taunton, Mass.

QUESTIONS AND ANSWERS.

Roxborough, Phila., Aug. 2, 1886.

G. M. DOOLITTLE, Esq.

MY DEAR SIR: Of all the answers to questions that have appeared in the "Api" since I readers, nothing has have been one of its given me more information and pleasure than your answer to Mr. Cushman in this month's (Aug.) number.

Would it be presuming in me—a beginner—to ask two questions?

QUESTIONS BY J. H. JONES.

1. What plan could I adopt to make the change of frames in brood-chamber if I were away when the bees swarmed?

I use Alley's trap and clip wing.

2. What style section-cases are to be preferred, and do you practise "tiering up"?

I am prompted to ask the latter question from the fact that I am using a full story (56 sections) on my hive and the bees work only in lower row of sections. If at any time you will kindly favor me with a few lines, I will sincerely thank you, and remain

Very truly,

JOHN H. JONES.

ANSWERS BY G. M. DOOLITTLE.

1. No plan of course could be quite equal to being on hand when the colony swarmed, but I have often proceeded like this. When I am absent from home at any time, when swarms are expected, I request Mrs. D. to watch the bees, or if both of us go, I ask a neighbor's boy or girl to look after them, giving them so much an hour, for as yet I have not bought a drone and queen-trap for every hive, as I am so seldom away from home that it would hardly pay me. Were I away a great deal it might, for of course the trap would catch the queen as well as Mrs. D. or the boy. Well, whoever watches is instructed to go to the hive which swarms and catch the clipped queen by letting her run into a wire cloth cage, after which the cage is placed near the entrance to the hive and the hive marked so I can at once go to it on my return. Sometimes I find half a dozen waiting for me. I now go through the same operation described on page 182, Aug. No., except that as I took out each from the hive, I shake off the bees in front of the hive till about the same number is left on each frame as there would have been when the swarm was in the air, leaving rather more if any difference, when all will work the same as described on page 182 with this exception: more bees are apt to return to the old stand, and if care is not used to have rather more bees on than would be while the swarm is in the air so many will return that should it be cool or suddenly turn so, some of the brood would suffer or die of exposure. All know that a swarm of bees when first hived mark their location so that more return to the parent hive, while bees otherwise taken to a new location do not so mark, but return to the old stand. Well, for years I have noticed that a peculiar trait

of all of the yellow races of bees is that the bees from the parent colony having cast a swarm when they first fly from the combs or hive, after it is set in a new location, mark the spot from which they left, the same as does a bee from a swarm, and this is just the reason that more bees should be taken when the change cannot be made while the swarm is in the air.

2. After trying nearly all the section-cases advertised in our bee paper, and many not so advertised, I have come to the conclusion that inch-frames holding but one tier of sections give the best results with the least work, trouble and annoyance. Wide frames, two or more tiers of sections high to be used in the upper story of a two story hive do not work at all satisfactorily with me, so I have discarded them entirely. However, I find them very handy when hiving very large swarms, where one-inch frames of sections are placed at each side of the hive to take the place of dummies in contracting the hive from an eight-frame hive down to five frames. Those wide frames are hung in the hive with the separators toward the comes, and it is a rare instance that I get either brood or pollen in them. By taking this in connection with what I say on page 182, it will be seen that three-inch frames are only left at the side for twenty-four days, when they are taken out, generally filled with nice honey. If all are not so filled, that portion of them is placed on top in the one-tier wide frames, when they are finished. This makes some work but as such are only used on very large swarms but little of this changing of sections is required, as they are generally complete at the end of twenty-four days, so that it is no more work to handle wide frames of sections than it would be dummies. You ask about tiering up. I do not like tiering up, nor never did, for by this plan I am liable to have too many partly finished sections at the end of the season, especially should the season be a little poorer than we expected. However, the wide frames I use can very easily be made so as to tier up. A brief description of what I prefer is as follows: make wide frames to accommodate the number of sections you desire, consistent with top of your hive and size of section. I use four sections in a frame. Next make two boards the same length and height of the wide frames. Drive a nail into each end of one of these boards, letting it project one-fourth inch and a large headed tack into each end of the other, driving it in so that by winding a string around once or twice it will hold the string as in a vice. Now procure some one-half inch wide rubber bands (little coil wire springs answer a full better purpose) at a rubber store and cut them into pieces two and one-half inches long. Tie a short string by making a slip-knot to one end of the rubber and to the nail driven in the first little board, and then tie a longer string to the other end of the rubber. I use one eighteen inches long. Put your wide frames on the hive two, three, five, seven or ten as you wish, set one of the little boards up on each side, draw the rubber till a strong tension is made, and wind around between head of tack and board to fasten when you have an arrangement that you can enlarge or contract, invert or tier up as you please, and one which I consider superior to anything yet brought before the public in shape of a surplus arrangement for comb honey. For practical work I use it as follows: when the honey reason opens I put from two to five inch frames, on each colony according to size, be-

ing careful not to give too much room so as to discourage the bees at the start. In a week or more, add two more wide frames, one at each side and so on till the full capacity of the top of the hive is used, putting the empty sections on the outside always. As I use chaff-hives largely, this gives me room for twelve wide frames should occasion require, but as a rule from six to eight are all that are used. As soon as the first are completed they are taken off, the other wide frames crowded to the centre and the empty sections put at the outside as before. As the season draws toward a close, calculations are made so as to get all as nearly completed as possible.

Now no empty sections are put on so that at the end of the season the number on each hive is about the same as it was at the beginning of the season all of which are generally finished.

FEEDING BEES.

QUESTIONS BY A READER.

Owing to drought and unfavorable weather generally during the greater part of the past honey season, much feeding will be necessary this fall in order to save thousands of colonies of bees. In view of the above fact, will you kindly answer the following questions?

1. When would you begin feeding?
2. How fast would you advise to feed, that is, would you take two weeks time to feed a colony 12 or more pounds, or do you think it better to get the above amount in the combs as soon as possible, say in two days?
3. What is the best food for bees to winter upon?
4. Would you advise mixing a small amount of honey with sugar-syrup, say one part of honey to three parts sugar? Do you think such a mixture would be detrimental to the bees?
5. What feeder have you found most convenient and practical? Do you feed at the entrance, over the frames or inside the hive?
6. How much food does a colony require whether wintered in or out of doors?

ANSWERS BY A. E. MANUM.

1. I usually begin feeding the last week in September or the 1st of October, as then the brood is generally all hatched when there is a plenty of room for the bees to store the feed, and then again, at that time the breeding season is over; hence the feed given them does not seem to stimulate brooding. Were bees fed earlier in the season it might stimulate breeding and cause the bees to consume much of the honey they have stored, which I prefer to save until spring for early breeding.

2. I prefer to feed very rapidly; as fast as the bees will take it. If they need 12 lbs. I would feed it all at once, if I had feeders sufficient to do so. The faster they are fed the better, that they may have time to evaporate and cap it over ready for winter.

3. I prefer granulated sugar syrup, though I do not worry when my bees have a plenty of well-ripened clover or basswood honey, and it very rarely happens that they do not have, as I prefer to have such stored in the sections, which is not a difficult matter with my method of management.

4. No, I would not advise the mixing of honey with the syrup; not that I think it would be detrimental to the welfare of the colony if fed fast enough so as not to stimulate breeding, but that it might induce robbing. The scent of honey when fed in the fall is quite apt to greatly excite the bees,—*much more so than sugar*. If I had honey that I wished to feed back, I would prefer to save it until spring and then feed a little at a time, or if I wished to winter on honey, I would feed at sundown and feed no more than the bees would store during the night.

4. I prefer the Simplicity feeder holding one pound of syrup. Then

I place as many of these on the brood chamber as I wish to feed number of pounds. I feed inside the cap over the frames (my hive is a chaff hive).

6. I always winter my bees on the summer-stand and I aim to feed them up to 30 lbs. each but 35 lbs. is safer for those who do not look after their bees very closely. This amount will last them until the 1st of June. For indoor wintering, I presume 20 to 25 lbs. will answer.

ANSWERS BY DR. G. L. TINKER.

1. In this locality I would begin feeding not later than October.

2. I would advise feeding not more than one pint of extracted honey or syrup per day. It will not stimulate brood-rearing very much, if at all. Bees show the first signs of hibernation early in October, after which there is no disposition to breed except with very young queens. One-half pint is enough to feed at once. Feed at noon and again in the early evening, a little while before the bees cease flying.

3. Good natural stores.

4. I would mix honey with syrup if I had not enough honey to feed, and I would feed syrup alone if I could not procure honey. But if I bought extracted honey, I should make sure that it came from an apiary free from foul brood; if I was not sure, I would boil every bit of it for ten minutes before feeding to the bees, and take the greatest care that the bees got not a taste until I did. In preparing extracted honey to feed bees, it should always be first diluted with about one-fourth water, otherwise it may candy and become very hard in the combs. I believe that sugar syrup alone is detrimental to bees in winter, but when mixed with honey and there is a quantity of bee bread in the combs it is less so.

5. I have tried many kinds of feeders, but have found none better than a tin funnel placed in a hole in the top or back end of the hive which is to be slightly tipped back. Do not like to feed at the entrance or over the frames, unless it is comb honey, but prefer the inside of the hive on the bottom-board, which has a shallow rim.

I use a double cover to my single-walled hives, the one next to the bees being a board one-fourth inch thick, with cleated ends, having a rim nailed to the under side with brads to make a bee space. It is not painted and is left on all winter. I select my poorest lumber to make them of, often using a number of narrow pieces. A small auger hole is bored in the back end, and a cork put in which is taken out, and the funnel put in when feeding.

6. An ordinary colony, with protection, requires only ten pints of honey or syrup to winter it. If the colony is very populous, I give twelve pints; but if the bees are left in single-walled hives without protection, more than double the above amount is often consumed. If a colony of bees is properly cared for it will not consume over three pounds of honey, from the fifteenth of October till the first of February, when breeding usually begins in a small way. If well wintered, but very little honey is consumed till extensive breeding begins in April.

ANSWERS BY P. R. RUSSELL.

[In many localities the present season has been unfavorable for the production of honey, and many colonies will require to be fed in order to survive the coming winter. How and when to feed in the best manner is what we want to know, and I will contribute my mite towards the general fund of information on the subject.

My methods may not be adapted to all localities and conditions, but as they seem to fit my environments I will give them for what they are worth.]

1. In my locality I get usually quite a flow of fall honey from golden rod and wild asters, and it is apt to come all in a bunch about the last ten days of September. Therefore I do not begin to feed for winter stores before the first of October. If the honey harvest closed in August or before, I would then feed in September, which would be early enough in any case.

2. I think it best to feed as fast as possible and have it all over with by the middle of October. I begin by selecting say a dozen of the most needy ones and fill them up first; then transfer my feeders to the next batch and so on, and the last to be fed will be those that need the least. Four days' time ought to be long enough for a colony to take down six or eight quarts of food.

3. I know of nothing better than honey for bees to winter upon, but sugar syrup answers very well indeed, and is a perfectly safe food; while honey, if fed in the raw state, may communicate the much dreaded "foul brood." Sugar food is usually much cheaper than honey and I should buy it by all means before I would buy honey to feed. However, if one is overstocked with honey it may be best to feed it.

4. Honey (known to be free from the germs of foul brood) is nature's own food and may be mixed with sugar syrup in any quantity without any harm to the latter, and I should not hesitate to use it thus mixed. Honey from fall flowers is said to be poor stuff for bees to winter upon, but my bees never get anything else but this to winter on (except the sugar syrup when needed to supplement the honey) and they generally bob up serenely in spring.

5. For a feeder I use the one and two-quart Mason jars inverted over a hole in the honey board and fully described in a former article. Care must be used to prevent food from flowing too rapidly, which it will sometimes do if the jar is imperfect or canted a little too much on the hive from the vertical. One great advantage in this style of feeder is the fact that the bees will suck the food down in quite cool weather when they would not leave their warm nest to enter a feeder from the top. There are other styles of feeders that work well. But I think a good feeder should hold at least a quart and admit of being used at the top of the brood frames.

6. I have tried feeders to be used at the entrance but don't like them. They are not adapted to fall feeding, when we are apt to have cool nights. At such times the bees like to feed in the most comfortable spot, which is at the top of the frames.

7. Like all animals bees require more food to keep up the animal heat necessary to sustain life, if left with little protection from the frosts of winter. Therefore it pays to give them a warm shelter. A colony in a single wall hive, out of doors, ought to have thirty pounds of food in the hive, in October, to insure them against starvation; but if properly packed in a good double wall hive 20 lbs. would probably answer. It will emphasize the importance of winter protection when I state that a colony protected from cold will winter on twenty pounds of food, that would otherwise starve to death.

Bees wintered in a suitable cellar would consume a minimum quantity of food, but the conditions otherwise are more complex, and the tendency at present among leading apiarists seems to favor the plan of packing bees on their summer stands.

[The illustration below represents the Mason fruit-jar feeder. The jar has a glass-top which is held in place by a metal band. We remove the glass-top and make one of tin exactly the same size in which are from ten to twenty small holes made with a brad awl. The

Fig. 1.

feeders are filled with syrup and inverted over a two and one-half inch hole in the honey-board. The bees sip the syrup rapidly and a good colony will take about one gallon each twenty-four hours. We can furnish the tins by mail, at five cents each.]

QUESTIONS BY J. N. SHEDY.

1. Are the queens of the Albino race large or small?

2. Are they yellower than Italian queens or darker?

3. Are they a pure race bred-up from the Italians by selection and in-and-in breeding or are they the outcome from a cross of two or more races?

ANSWERS BY W. W. CARY.

1. Queens from Albino mothers are medium in size.

2. Color is usually good as from other strains and much better than from imported mothers.

3. I do not consider the Albino bee a distinct race, merely a distinct strain; whether produced by crossing or otherwise do not know, but consider them a valuable strain as they possess beauty, gentleness and have proved good honey gatherers with me.

HIVING SWARMS ON FULL SET OF FRAMES, FOUNDATION, ETC.

Do you hive new swarms on full set of frames, or half that number with division-board crowded up? Do you give full sheets of foundation in brood frames or starters, or use empty frames?

ANSWERS BY G. H. MARTIN.

It depends altogether upon the swarm. The beekeepers should hold to the rule, keep your colonies strong not only through the spring and fall, but also during the swarming season. If I hive a swarm that is not large enough to cover all of the frames, I double another swarm in with them or else give them frames of brood. I have never used a division board at this time of the year.

I use full sheets of foundation. I am sure of all worker comb by so doing. If bees are hived upon empty frames the amount of drone comb built will average two full frames. That's the way my bees do it. Now I have described the way I hive natural swarms, when I have them, but as I extract my honey I am but seldom troubled with swarming, and for two or three years past I have had so many empty combs at command, that I usually hive a swarm upon a full set of them, and put on the surplus at once and if there is honey you are sure to get it. With 150 or 200 colonies any amount of good combs can be readily procured. One frame of foundation at a time inserted in each hive will be worked out and the combs become multiplied so fast you hardly know where they come from.

MARKINGS OF PURE ITALIAN DRONES.

Will you please be kind enough to answer the following questions:

Are the markings of pure Italian drones all alike, or similar to the drone progeny of a mismated queen?

Please give an infallible test for pure drones.

Ans. Pure Italians drones differ very much in their marking. The most beautiful Italian drones will not in all cases produce what are called three-banded worker bees even when mated to a golden colored queen-bee. On the other hand, drones almost as dark as black bees prove to be pure, and whose worker progeny showed pure mark-

ings. There is, so far as color is concerned, no real test for pure Italian drones.

Speaking of 3-banded worker bees, reminds me of an opinion I have often expressed, namely, that no Italian bees, however handsome and pure they may be, have over two bands. Sometimes a customer has complained that queens sent him were not pure, as the bees had but two bands. I find that even at this late day some well-posted apiarists agree with me in this same opinion. Whether any one agrees with me or not I still claim that pure Italian bees have but two yellow-bands.

Pure Syrian drones are nearly black, or perhaps nearly the color of Carniolan drones; the white hairs covering the thorax gives them a color nearly a steel-gray. The worker-progeny of Syrian bees is very handsome, though not even the purest Syrian queens will produce all 2-banded worker-bees.

CARE OF BEES FOR SEPTEMBER.

G. H. MARTIN.

THE more we handle bees the more we are impressed with the importance of getting our bees ready for winter quarters at an early date. We make it a point, therefore, to get our bees ready for winter, if possible, in September. We run our apiaries for extracted honey during the clover and basswood flow; two frames of sealed honey are placed at one side of the extracting super and reserved for use in September.

If we have not already superseded all old queens, we now replace them with young and vigorous ones. It pays to supersede after a queen has given us three years' service. A queen would perhaps do well a portion of the fourth year; but, when queens are induced to lay by inserting empty combs every few days, the high pressure plan shortens their usefulness several months.

From the middle to the last of September our business is to arrange the brood-nest. Every comb having a superabundance of bee brood is removed. We are not particular about removing all pollen, but place the combs having a small amount to the sides of the hive. If there is not enough honey in the brood-chamber, the combs, one or more, that were saved while extracting, are inserted in the centre of the brood-chamber. This is the most delightful and rapid method of feeding any one can possibly practise. The food is beautiful, well ripened, well-sealed clover or basswood honey, upon which bees will winter if they will winter upon anything. We would resort to sugar feeding only when there was no honey to feed. At present prices of extracted honey and granulated sugar, we would let the bees starve if they cannot be wintered upon their own best stores. We do not mean to say we would let them starve before we would resort to sugar. If bees could not gather enough natural stores it is then time to talk about sugar feeding.

At this time one comb is removed from the brood-chamber and the others spread a little. A passage from comb to comb is provided by either cutting a hole in the centre of the comb or by laying on sticks or a Hill device across the tops of the frames. We think a hole is a safe plan.

All weak swarms should be united. The beekeeper should, however, make it a point to have no weak swarms in his apiary; they are an unprofitable species of stock to have around.

We have successfully wintered three-frame nuclei, but better success attends the wintering if three or four are united.

There is much written about late brood-rearing and that safe

wintering is only attained by that method. In this locality we should think feeding for that purpose was utterly useless. We have frequently marked hives that were broodless in August that have wintered as well as if not better than those in which brood-rearing was continued until October.

After preparing our bees in the above manner they are left quietly upon their stands until we put them in the cellar or pack with chaff and this is done as quietly as possible. By this plan you have the month of October and perhaps a part of September for other work.

HUNTING WILD BEES.

One of our readers who lives way down in Texas desired us to give information for hunting bees in the woods. Below will be found an article taken from the *American Bee Journal* of Aug. 11.

You require a small box, which can be made of any kind of wood. The box is of a slanting shape, and should be made according to the following dimensions: bottom, 4x6 inches; sides, 4 inches at one end, bevelled down to 1½ inches at the other; end pieces, one, 4x4 inches, the other 1½ deep by 4 inches long. The top should be a separate piece, and made as follows: width, 4 inches, whole length, 12 inches; cutting down 4 inches on end for handle, and inserting a glass 3x1 inches, flush with the under side at the other end, as near the end as convenient.

The box should contain a piece of honey comb about 1¼ inches in thickness, which should be scented with bee-bait covering the bottom of the box. The directions for making this are as follows:

Half an ounce of tincture of annis mixed with a half dozen drops of oil of organum, to be kept in an air-tight bottle.

Taking the box in the left hand, and the cover in the right, and approaching the bee while at work on the flower or shrub, you insert the box under the bee, and quickly putting the cover on the top (in such a manner that the light can shine in) you have the bee secure in the box; then put the box on a stake three or four feet high, taking care not to jar the box more than is necessary. Then shove the cover down so as to shut out the light from the glass, when the bee will go to work on the honey, which can be ascertained by holding the ear to the box, as it will cease its "humming" as soon as it commences on the comb. Then the cover can be taken off and the bee will remain on the honey. Then take a position where you can have an unobstructed view of the box and its surroundings, and wait for the bee to come out, which it will do in from one to three minutes, and commence circling in the air, gradually enlarging the circles until it finds its latitude, at which it will immediately start in a direct line for its home, and here care must be taken to accurately mark the direction it goes. You must now wait for a short time when the bee will return and re-enter the box, which it will repeat as long as the box remains. If the tree should be near by, the other bees will accompany it on its second or third return; if at a great distance it will take a longer period for the bees to "double up."

If you have gotten fifteen or twenty bees at work on the line, you can safely take the box to a point as far distant, in the course the bee has taken, as you choose, being careful not to pass where the bee is likely to tree, as they will not follow the other way.

Now, open the box again, and if you are on the line the bees will find it in a very few minutes. If they do not you will know that they are off the line, or have passed the tree, and should move your box to a point that you know is on the line. This is to be repeated until you run the bee to its tree

If you have but a few bees it will be necessary to shut them in the box and move them in this manner from 30 to 60 rods at a time, then open your box and wait for them to go and return. This is to be repeated until you have found the tree.

Cross lining is important. If anything should prevent you from following the bee in a direct line from where you first start it, you can move the box a distance to the right or left and start it again, by which means you can centre the bee on some prominent object, whereby you can invariably locate the tree within a radius of five or six rods.

Instead of using honey in your box, put a quantity of granulated sugar in a bottle and dissolve it with cold water until it becomes a thick syrup, and fill the comb in the box with this liquid, which is better than the real honey.

[We have had some experience in hunting wild bees. When we went into the woods for the purpose, and no bees could be seen, it was our custom to burn a small piece of beeswax or old honey comb. If there were any bees located near enough for the scent of the burning beeswax to reach, we soon had them about us, as nothing will so quickly excite bees and set them to investigating matters as the fumes from burning beeswax. When the bees came, they would soon enter the box for the honey, and then it was an easy matter to hive them. It should be understood that hunting wild bees cannot be made a success except at a time when the flowers are yielding no nectar.—Ed.]

EDITORIAL.

ANOTHER LAWSUIT ON ACCOUNT OF KEEPING BEES.

Now comes Mr. S. W. Rich, of Hobart, N. Y., who has been sued by his rich neighbor for $1,500 damages, and also to compel him to move his apiary.

It seems that his neighbor is more troubled in mind over the alleged *nuisance* than in reality. He boasts that he will do all that money can get done to compel the removal of the bees. The apiary is in a small village, but there never has been a case reported of either a man or beast being stung; neither has there been any trouble caused by them. It seems to be a real case of disagreeable fault-finding.

Am. Bee Journal, Aug. 4.

The above case is similar to one which happened in Wenham some seventeen or eighteen years ago. Mr. John J. Gould had kept bees many years in old box-hives with little success. About the time named, or a few years after he had adopted the Langstroth hive, Mr. Gould began to have considerable success with his bees. One year we had here an unusual flow of honey and Mr. Gould did so well with his bees that his neighbors began to feel rather envious and show a disposition to growl. As Mr. Gould had but one acre of land the neighbors and some few townspeople thought that Mr. Gould's bees obtained their honey from flowers grown outside the owner's land. No lawsuit was the result, but more ugliness and spite were never exhibited than on the occasion of this most foolish attempt to injure Mr. Gould and his apiary. The people complained

that their fruit crop was injured by the bees sucking honey from the blossoms. The result was that Mr. Gould moved his apiary some seven miles away. Since that time, we have kept nearly double the number of colonies that Mr. Gould did, and the people who made such a fuss feel rather cheap from the fact that fruit has been so plentiful and cheap in this vicinity that it does not pay to market it. When fine large Bartlett pears will not bring over thirty cents a bushel in the market it seems like nonsense to say that bees injure the fruit blossoms. We have sold fruit off the same trees for $4 per bushel.

An envious neighbor will kick up quite a racket in any neighborhood or small township. Most of the lawsuits resulting from keeping bees are caused by the envious and, in most cases, meddlesome neighbor. We all have enemies, and the best way to protect ourselves is to join the BEEKEEPERS' UNION. Then if obliged to defend a case in court on account of keeping bees, the expense will not all have to be borne by the person attacked. It is the duty of every beekeeper to join the union as, "In union there is strength."

We will furnish membership blanks to all who wish to unite.

—During a honey dearth, any colony that is to be used for queen-rearing should be fed liberally for two days previous, with syrup made of sugar and pure honey. A colony thus treated will then be in good condition for cell-building. Then feed liberally, say one quart syrup each day until the cells are capped, which will be on the fourth day after the eggs are given them, and our word for it, you will have queens equal to any ever reared under the swarming impulse.

—The October number of the "Apiculturist" will contain essays on "WINTERING BEES" by James Heddon, G. M. Doolittle, A. E. Manum, Dr. G. L. Tinker, J. E. Pond, P. R. Russell, Ira Barber, J. H. Martin, Prof. Cook and other noted apiarists of large experience and well known to all who read the bee journals.

We shall print a large edition of the above number and every page will be electrotyped, as the call for it will be very large.

This will be a splendid chance for advertisers, as a paper that contains so much valuable matter will not be thrown away or placed where it cannot be found when desired. This number, in order that all may take advantage of the methods given in preparing their bees for winter, will be mailed September 25.

— Every beekeeper should take an interest in his state or county fair. Take your honey and bee fixtures and exhibit them. This is a good way to advertise your honey and goods. Go prepared to show bees, queens, etc., and, above all, take an observatory hive with you and, our word for it, it will attract a larger crowd and more attention than anything else exhibited.

—Many of our subscribers have written us that the July APICULTURIST did not reach them, and want to know whether or not it was published. The July number was mailed to all, and why every subscriber did not receive his copy is a mystery to us. We have no back numbers of that issue and cannot supply those who failed to receive them. If any reader will mail us No. 7 of Vol. IV, we will send any other number or will extend their subscription one month.

—We had some experience with two pound sections this year that shows the advantage of filling the boxes full of foundation.

We put on some sections which were but half full, and got the most tantalizing lot of drone-brood in the bottom of the sections. A queen-excluding honey board would have prevented all this, but filling the boxes full of foundation would have been better.

Care should be taken to take off the clover honey from the hive before the darker buckwheat begins to yield. A box of fine white clover honey may be spoiled to sell as first-class by a few cells of dark honey put in around the edges, or through the centre.

—There may be such a thing as bringing out the bees too strong in the spring. A friend of ours wintered his bees in a very warm place out of doors, having packed them very warm with dry leaves. They came out very strong, and swarmed before fruit-blossoms fairly opened and they have kept up swarming all summer, but have made hardly any honey. Our bees were not as strong so early as his, but got ready as soon as there was honey to gather, and have brought in a fine lot of honey, casting but few swarms.

—We have Italian bees that are gathering honey from red clover, (second crop)while no other race we have in our apiary is doing anything.

—Don't fail to read our advertisement, on another page, of the Bay State Reversible Bee-hive, and the inducements offered those who desire to manufacture the Drone and Queen-trap.

—In order to meet the large call by dealers and others for terms for manufacturing the drone and queen trap, we have had some brass-stamps made to be attached to each trap. Those who purchase the stamps and attach them to the traps can manufacture and sell all the traps they desire in any part of the United States.

The call for the trap the past year has been immense, and another year it will be much larger. All who can manufacture them should do so, as the beekeeper will be most likely to purchase them at the nearest place they can be obtained.

We will establish a sort of directory giving the names and address of all of whom the traps can be obtained. Those who manufacture them and have not the facilities for making the tubes can obtain them of us, by mail.

See prices on another page.

—The regular number of reading columns in the "Apiculturist" is forty-eight. The other pages are for advertisements. To accommodate advertisers and to make room for correspondents, other pages will be added as occasion requires.

RENEWALS.

Remember that all who renew their subscription, and all new subscribers can get a select Italian queen by return mail, by sending fifty cents in addition to the one dollar for a *year's* subscription to the Apiculturist.

THE HONEY CROP OF 1886.

[The following reports were crowded out the August number.]

Bradford, Iowa.

Counting for the past twelve years the honey crop in my locality is hardly up to the average; but for the last five years it is somewhat above the average. As to

my crop it is about 100 pounds per colony, part comb and part extracted, and ninety per cent increase. One colony gathered 462 pounds, besides winter stores, and was closely followed by two more. Twenty other colonies only stored enough for winter after building up. The harvest lasted thirty-five days, without intermission, beginning June 7 and ending June 12, but it was so dry that the daily yield was light. Farm crops are not half crops on that account, and the honey crop would have been the same had it not been for basswood (which roots deeply) following the white clover, as the clover was soon burned brown and dead. We are not likely to get much, if any more, honey of any kind this year. I left the hives full of basswood honey for winter. I have experimented this season, so that I have concluded that one colony of bees of equal strength and in a like condition as another will gather about the same amount of honey; and it is not owing so much to the difference in industry as is generally supposed.

The colony that gathered 462 pounds surplus did not have in its hive at any time more than eight combs of brood, while some having from twelve to twenty fell behind in the yield. And I attribute the propagation of the brood to the difference in results.

C. W. Dayton.

Borodino, N. Y., July 15, 1886.

The outlook here for a crop of honey for 1886 is quite poor. My estimate is about ⅓ crop in this section. White clover yielded well for eighteen days and the yield from basswood has been moderate for the past five days up to yesterday. It is now cloudy and rainy and the basswood bloom begins to look old, so I think little more will be gathered. Teasel also don't seem to give much honey. After basswood we get little or no honey.

Yours,

G. M. Doolittle.

Sussex, Wis.

The outlook for a good crop of honey in this part of Wisconsin is very good. It has been pretty dry, yet white clover has yielded abundantly in nectar, and the basswood bloom has been very profuse, and continued longer than usual, being still in bloom at this writing, and the bees are improving the golden opportunity of gathering abundant stores. Thanks for sample copy of "Api" received.

T. E. Turner.

Taunton, Wis.

WHY IS IT?

I have one hive crowded full of bees, boxes and all. Every morning there are quite a number of dead bees on the alighting-board. Some of the bees are not quite dead, but soon die. I cannot see the cause of it, but would like to have it explained.

Chester F. Savory.

[If the bees are young ones, it indicates that there are a few worms in the comb; but if the colony is a strong one, no damage will be done. If the bees are matured, the colony may be afflicted with the new bee disease spoken of by Mrs. Hills on another page.—Ed.]

The North American Beekeepers' Society will hold its next (seventeenth) annual convention at Indianapolis, Ind., Oct. 12, 13, 14, 1886.

The American Apiculturist.

A Journal devoted to practical Beekeeping.

ENTERED AT THE POST-OFFICE, WENHAM, AS SECOND-CLASS MATTER.

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THE WINTER PROBLEM: OR HOW TO WINTER BEES.

METHODS PRACTISED BY SOME OF THE LEADING AND MOST SUCCESSFUL APIARISTS.

No. 1.

DR. G. L. TINKER.

WITH the knowledge on this subject gained within the last five years, there should be no difficulty in wintering bees. It is true there is still difference of opinion on minor points but the principal requirements on which success depends I believe are now quite generally agreed upon. The first of these is protection which involves the question of temperature. The writer is known to most beekeepers as the champion of the doctrine that cold is the primary cause of most of our winter losses as against that most fallacious of all the theories that have been set forth of first cause, viz., the pollen theory. But I am pleased to-day to record that my position on this question has been almost unanimously conceded. Protection from cold is now regarded one of the greatest safeguards against bee diarrhœa and not the removal of bee-bread from the combs.

Next after protection stands the question of food. I have maintained and still hold that good natural stores are first in value and reliability. Sugar syrup has been tried with success in many instances, but the fact remains that few bees comparatively have been wintered upon sugar stores. And in these few cases when put to the test of severe cold there have been many heavy losses. Hence I can but think that bees winter best on the food that nature has provided for them.

However, I believe sugar syrup infinitely preferable as a winter food to the sweet excretions of aphides which bees sometimes gather and store in the combs. It is also no doubt preferable to any inferior quality of honey that may be stored in the fall; as thin fall honey is especially deleterious and should be either extracted and good food substituted, as thick honey or syrup fed over it. Thin honey may be known by its running out of the combs when held horizontally.

VENTILATION.

Bees require free ventilation in winter. They throw off a large amount of moisture in their breath that must have a ready means of exit from the hive or the bees will become restless,—a never-failing indication of something wrong. All undue loss of heat must be prevented and it can be easily retained by giving free bottom ventilation and allowing no upward movement of air except through wood or other very close porous covering. The best and most economical covering in my experience is solid unpainted wood. Simply place a thin board over the brood-chamber so as to leave a bee-space over the frames in time to have it well propolised and I will guarantee it to hold the heat to the comfort of the bees and at the same time give an

almost unobstructed exit to all moisture, and that too, directly through the board and the propolis.

I am prepared to say from ample experience that every kind of upward ventilation through free openings or loose porous coverings is pernicious and liable to disaster; for the life of a colony of bees subjected to cold goes out with the loss of heat which is forced strongly upward through free outlets by the pressure of cold air coming in at the entrance. We can now see why bees instinctively stop up all crevices with propolis. It is to prevent the loss of heat which nature has taught them is life; and had beekeepers been as wise as the physiologist who said "heat is life," we should have saved thousands upon thousands of colonies lost in wintering, largely through the follies of upward ventilation. It has been a dear lesson indeed that has taught us that our theories of absorbents have been all wrong. We now know, if we can retain the heat, there is no difficulty about getting out the moisture. The heat expels it as heat expels moisture from a kiln of lumber even when sealed up as tight as it can be made, and it is heat that causes evaporation of moisture and dryness everywhere.

Where the temperature about the hives never goes below 45° or 50°, as in cellar wintering, we have a different state of things than exists in out-door wintering. Even with very free bottom ventilation if the hive is tight on top the bees may get too warm and become restless. Hence it will be seen that bees must be ventilated to suit their surroundings, the leading object being always to keep them in winter confinement in as torpid a state as possible; for we have learned that activity means waste of tissue, excessive consumption of food, loss of vitality and premature death. Spring dwindling can be traced to no other source. The bees are worn out with activity, with constant struggles, with adverse conditions of their life. Successful wintering means conservation of vitality which is best accomplished through what is known as

HIBERNATION.

This state which bees begin to enter, upon the approach of frosty nights in the fall, is one which cannot elicit too close attention by beekeepers; for upon it hinge the greatest successes of the future. It is simply a conservative state that the bee enters, enabling us to bring the bee of the fall to the bee of the spring with all of its vitality and working capacity intact, and unchanged by the intervening time. A bee's life is only too short but its length is measured by its activity; hence, to span the long winter months, it must have rest from its labors. Nature has provided this rest in what we shall henceforth call hibernation. It is not of course the profound hibernation of many other insects, nor does any one claim that. The bee becomes torpid, lethargic and respires imperceptibly. There is a considerable reduction of the temperature of the cluster from that existing in a state of activity to the lowest point consistent with vital action,—a slight respiration and imperceptible movement. The reduction of temperature is about 20°, enough to justify those who are claiming true hibernation for bees that they are indulging in no gibberish. It is a state, however, requiring food at intervals of from three to five days. I only know that they have regular feeding times when the whole colony becomes active and each bee seems to help itself to honey. When all have feasted they settle into the torpid state again.

A colony of bees properly hibernating will consume not more than one pound of honey per month and this state continues if all goes right, from the first of November to the first of February, when breeding commences. More heat is then required and the bees are no longer in a perfectly listless state. The patch of

brood started will be, however, quite small, usually not over four inches in diameter, so that no great increase of temperature is required. They start no more unless they have frequent flights, until in March when extensive breeding begins and hibernation ceases altogether.

Hibernation is secured only at a low temperature. It commences at a point below 50° and becomes more profound until we reach 41°. Going below that it gradually becomes less until below 32°. Going below this point the bees become active and the labors, destructive to their vitality and life, begin. Severe cold and currents of air interrupt hibernation and should be provided against in order to the most successful wintering. Before bees are placed in cellars, the cellars should be cooled to 41° by opening hatchways or ventilators at night, and the temperature should be kept down by the same means if inclined to rise. If the temperature goes below 41°, I would advise to raise it by the use of an anthracite oval stove and keep it as near 41° as possible till the first of February. Then raise the temperature to 48° and keep it there until the bees are set out. Two very serious mistakes are often made in placing bees in cellars: the first is in having the cellar too warm; and the second is in allowing currents of fresh air to enter through sub-earth pipes. Both of these conditions prevent hibernation and tend to restlessness.

In hives protected with chaff, sawdust, etc., we get a near approach to the condition secured in a single-walled hive in a repository; and, if the protection is sufficient, bees will winter out-of-doors as well as in. But it is plain, if we are to secure uniform temperature, we must winter in special depositories. My objection to chaff-hives is the cost and the labor of preparation for winter.

New Phila., Ohio.

No. 2.

P. R. Russell.

SIX YEARS' EXPERIENCE WINTERING ON SUMMER STANDS WITH GOOD RESULTS.

To solve the problem of wintering bees successfully requires the application of a little common sense in connection with practical experience. In the early days of my beekeeping, I had very poor success in wintering, not having a proper knowledge of the matter. I then used the single-wall Langstroth hive holding ten frames, and sometimes I attempted to winter them on their summer stands, and at other times in the cellar. In the former case, I did not contract the brood-nest at all, or give much of any protection, supposing the hive was all the protection needed, but I found out my mistake after a while. Wintering in the cellar proved a failure also, as my cellar was damp and unsuitable.

Now for six winters past I have left my bees on their summer stands packed in planer shavings, mostly, and with very satisfactory results.

In September, I contract my hives to their winter status by removing all surplus boxes and extra brood-frames, never leaving in more than eight combs, and from that down to six according to size of colony. By Oct. 1st if any are found having less than twenty-five pounds of stores for winter they are at once fed up to that figure; then I let them set until I get ready to pack them, meantime throwing over the brood-chamber a plenty of old woollen mats and other things (by the way, I am a great hand to keep the bees covered up warm at all times, summer or winter). Early in November, I pack for winter by filling the vacant space between brood-combs and outside case with shavings. There is no particular merit in shavings, over other ma-

terial, only they happen to come handy to me. I now remove the honey-board, and cover the combs with a wire-cloth screen, allowing a bee space between. This screen answers also as the best passable winter feeder for feeding the sugar and honey mixture. If this screen is put on too early in the fall, or left on too late in spring, the bees will propolize it badly. Over the screen I apply plenty of comfortables or sacks filled with leaves or shavings at least six inches thick. In the cover, ample ventilation is provided by a two-inch hole on opposite sides and as near the roof as possible. I never pack the cover solid full, because I want space for the wind to blow freely through and through, in at one hole and out at the other. I count this ventilation over the packing as very important, and not at all inconsistent with keeping the brood-nest warm. Everybody knows that dry clothing is much warmer than damp, and this *ample* circulation of air is just what keeps them dry, and consequently warm and comfortable, if they have plenty of packing. It is surprising how much dampness a colony can develop in cold weather, and I attribute my success largely to the fact of knowing how to get it out of the hive without chilling the bees too much. Keep them warm and dry is a good motto. Sunshine never harmed my bees in winter, but bleak and windy locations are bad. Snow and ice are harmless, indeed, I rather like to see my hives well buried in snow; however, I try to keep ice away from the entrance somewhat, and cant the hive forward a little to prevent any water from running in, also raise the hive from the ground just enough to avoid snow water. I never cut any holes in the combs for winter passages (useless). I never pay any attention to pollen. It is true my bees will spatter their hives quite a lot in spring when taking their first flights, but it is seldom I lose a colony from this cause. But, says one, don't the rain and snow beat in those great holes in the cap? I answer, yes, a very little at times, but it soon dries out again, and withal, much more dampness passes out than ever comes in. I have tried holes of one inch in diameter, also an inch and a half, but I find one and three-fourths about the correct size, and they should always be covered with wire cloth. I begin to unpack my hives about the first of May, or when they begin to call for more room. The standing or closed end frame seems best adapted to my system of wintering. The new Bay State hive is of this description and must at least be a good one for out door wintering. I don't think I should care to use "chaff hives" or those in which the packing is permanent, as they are too expensive and heavy to handle, also liable to get water-logged. If packing becomes wet and frozen it is worse than none at all.

In my opinion packing is much better than a mere dead-air space. Did you ever see an ice house built on the "dead-air" plan without being packed with spent tan or sawdust? The same principle applies to the bee hive. We pack our bees to keep the animal heat in, and we pack our ice to keep the solar heat out. The best packing material is that which is the poorest conductor of heat and cold. Water is a good conductor, therefore, dampness destroys the value of the packing.

When I go to bed on a cold winter night I don't cover myself up in enamel cloth or a rubber blanket expecting to keep warm by preventing a circulation of air. Did I do so, I should find myself damp and cold, and sickness would soon follow. But I cover myself with porous woollen blankets, that pass off dampness and keep me dry and warm. Why not give the bees the benefit of the same logic? I am well aware that bees winter at times under al-

most any kind of treatment, and again die out with the best of care. But these exceptions should not impinge against the rule of applied common sense.

Lynn, Mass., Sept. 7, 1886.

No. 3.

Prof. A. J. Cook.

This is a very intricate problem, and it is no wonder we are long in solving it. The bee is a native of a warm climate, where it is not subject to severe or long continued cold. It has the habit of retaining its fecal matter, and not of voiding it in the hive. In its native condition frequent flights make it possible for it to void often outside the hive; hence the artificial condition of long cold, and the equally long restraint within the hive, are most trying. More than this, the bee is ever active even in severe weather, and so under the artificial condition in which we place them, must eat, often quite liberally. If the weather is very severe, this eating is even more liberal, as the animal heat can only be maintained by greater functional activity. This is not mere theory, for I have found repeatedly that severe cold raised the temperature of the hive as shown by the thermometer, and we all know that such long cold winters require more food for the bees.

We have also a further complication. Bees eat heartily. They are long confined. They must perforce retain their fecal excretions for long periods. It seems then that the kind of food may be a most important item in the safe wintering of our bees. Nor is this mere theory. Long experience, while it shows that cold is a most important factor in the production of disastrous wintering, shows quite as conclusively that some other factor is also a partner with cold. At present no second factor seems as important as the matter of food.

WHAT WE KNOW.

It seems to me that we know that if bees have abundance of almost any kind of food, that is reasonably wholesome, and can fly out from their hives every few days, they are practically safe in winter.

Again, it seems nearly as well demonstrated, I think, that if supplied with good honey, that gathered from the flowers, whether fall or early honey, and maintained in an even temperature at about 45° F. about the hive, they will pass long confinement in safety.

Once more, while it may not be so thoroughly proved, yet we have very good reason to feel that in case the temperature is not maintained at the desired point, the bees are safer if confined to a purely carbonaceous diet, or if wintered on honey alone with no pollen. As honey often contains much floating pollen — the amount varies greatly even in the same kind of honey—we may conclude that where the temperature is not under our control, it is a safer thing to winter on a syrup made of the best cane sugar, than even on the best honey.

WHAT IS DESIRABLE.

It is desirable to have the bees fly out often in winter. This is beyond our control in our severe northern climates. It is also desirable to have the equable temperature about the hives of 45° F. This can be secured by packing well about several hives placed close together, which gives the chance of flight if the weather permits. Packing single hives, and chaff hives permit this except in very severe winters. The cellar is the surest means to secure this desideratum. By water in the cellar, or by sub-earth ventilation, any cellar can be made suitable, and many can be made all right without either.

Lastly, let us look after food; see that we never have unwholesome food. Never give our bees honey that we would not eat ourselves. Unless we are sure of our temperature, we better, in my judgment, exclude pollen, and will even find good cane syrup safer than honey. This last opinion is not mere guesswork but the result of many years' careful experiment and observation.

Lansing, Mich.

THE WINTERING PROBLEM.

No. 4.

J. E. POND, JR.

THE wintering problem is to-day the most important question with which our northern beekeepers have to contend. A large majority of losses are caused by lack of proper preparation, and he who gives us a rule, by following which the minimum of loss will follow, will benefit the fraternity to an incalculable extent. There is one peculiar thing shown by the reports of past years, and that is that no matter what method of general preparation is used, losses still follow; from this we judge that no inflexible rule can be given, the following of which will cause absolute immunity from loss. The best that can be done is to adopt that method the following of which has shown it to be the nearest to safety of any which has been adopted. For myself, I have always wintered on summer stands, and am not qualified to speak of any other method; the fact, however, that during the last fifteen years I have lost but four colonies (all of which starved) is proof that the plan of preparation for winter, made use of by myself, is as safe as any at least in my own locality; viz., eastern Massachusetts.

In this article I do not propose to discuss the various methods made use of by others, but simply to give a brief and comprehensive statement of the method adopted by myself and used for over fifteen years, with the result as heretofore stated, during which time I have wintered from ten to twenty-five colonies each season. I use nothing but the Langstroth hive; I have used such constructed with double and single walls; chaff-filled, filled with cut straw and sawdust, and with no filling at all; my preference now being for a double-walled hive with dead-air space, the inner wall being not over one-half an inch thick.

I begin my preparations for winter as early as the first of September, by leaving in the hive at that time only as many frames of comb as the bees can cover. My intention is to have no less than five frames and no more than seven at that time. I cause the upper two-thirds of these frames to be filled with sealed stores, taking no pains to remove any pollen, but extract any honey in early October that may be stored in the lower-third of the frames. Brood-rearing I keep up by stimulative feeding as late as the bees can care for the brood; desiring they should go into winter quarters with a full quota of young bees.

On the advent of settled cold weather and as soon as the cluster is beginning to form, I force such clusters to the west side of the hive (my hives face to the south). I have used division-boards of various kinds, but consider a one-half inch board as good as any, especially when used in a double-walled hive. In using a single-walled hive, I should use a division-board one and one-half inches thick made of one-half inch stuff, with dead air space between.

After forcing the cluster to the west side of the hive up, place a "Hill's device" or its equivalent on the frames, so as to allow for the tops

of the frames and the covering blanket; then I cover in the bees closely with a piece of burlap or other porous material, placing on top thereof a blanket composed of three or four thicknesses of old ingrain carpet, giving six inches of space at least in the upper story above the blanket. In each end of the cover I bore a one and one-half inch auger hole for ventilation. To a full colony, viz., one on seven frames, I give the full entrance, contracting it for smaller colonies; having made the above preparation, I give no further thought or care to my bees till the advent of warm weather in the following spring. My theory is this: cold of itself does not kill our bees; excess of moisture will do so. If the bees can get at their stores at all times during the winter they cannot starve. Prof. Cook to the contrary, I believe they require pure air. Taking these statements as axioms, I conclude that from five to seven L frames two-thirds filled with honey are stores enough for any colony; by allowing one inch of space above the frames they have the chance to get at all their stores without breaking up their cluster; by giving a full entrance they have plenty of air, the porous packing on top the frames retaining all the heat, while allowing the moisture to pass off imperceptibly and thus without detriment. Whether my ideas are accepted or not, or my method of winter preparation adopted, I have the satisfaction of knowing that my bees have wintered safely in the past, and of believing they will do so in the future; and, until I meet with losses, I shall "stick to the bridge that so far has carried me safely over."

Foxboro, Mass.

No. 5.

G. M. DOOLITTLE.

HOW I PREPARE MY BEES FOR WINTER.

I SEE by the September number of the "Apiculturist" that I am expected to give an article on wintering bees in the October number. I hardly know why I should be chosen to write on this subject; for, candidly, I do not know how to winter bees.

All doubtless are aware that I have lost bees to a greater or less extent for the past fourteen years, losing as high as 75 per cent of them during one winter and never less than 3 per cent. However, as my losses are growing less each year, and as I have made many careful experiments to see what plans were best for me to adopt, I will give the reader the benefit of these experiments, by telling them how I am preparing and shall prepare my bees for the winter of 1886–7. To reap the best results, I find August and September are the months in which bees must be prepared for winter. This gives the bees a choice to get their stores for winter placed just where they wish them, so that by the middle of October they are ready to go into that quiescent state which is conducive to the best results. Therefore I am now working as follows: I go to each hive, open it and carefully remove each comb, noting the amount of bees, age of queen, square inches of brood and pounds of honey. The amount of bees is told by observing their appearance on the combs; the age of the queen is told by looking at the last year's record, if her wings are clipped; if not clipped, I know she is of the present year's rearing as the wings to all my queens are clipped in fruit bloom. The square inches of brood is gotten by measuring a few different-sized patches when it is easy to estimate it afterwards; and the pounds of honey are found by weighing a few combs of

varying fulness, till the eye gets so trained that every comb can be counted off as to weight of honey with an accuracy approaching perfection. As I write this out it looks like a tedious job, and the reader will doubtless say that rather than go through all this operation he will simply "heft" his hives as heretofore and "guess" that all have enough to carry them through. But to handle three or four hives is to become an expert, and if the reader will only try it he will soon find that after a little while he can count off bees, brood and honey as fast as he can handle the frames, which together with the satisfaction of knowing just what each hive contains will never allow him to go back to the "hefting, guessing" plan again. When I go over the hives in this way I have a stool I carry along with me to sit upon (tell Dr. Miller I never will chide him again for sitting down while he works at bees) in which is a little box for holding a few tools, etc., that I may need for immediate use. In this box I have some pieces of sections, so that as soon as a hive is closed I can write down all about the condition of the inside. This piece of section may read something like this: 9–5mo., 1886. Bees plenty; choice Italian queen reared in '86; 400 sq. in. brood; 30 lbs. honey. The piece is now laid on top the honey-board or quilt to the hive and the cover put on, when two little flat stones are put on the cap to tell me that inside said hive are both brood and honey to spare. For instance, if the stone is placed at the right said back corner, it says honey to spare; if at the left back corner, it says brood to spare; if at the front right hand corner it says short of honey and if at the left front corner it says short of bees and brood while if all is as I wish it for winter a stone is placed in the centre of the cover.

In this way I make these little stones tell me at a glance over the apiary just what each hive contains, so that it is now but a few minutes' work to go over the yard and equalize all so that each is in a similar condition for winter, when the little stones are taken off and slipped under the bottom-board to the hive, where they belong when not in use. If any are still short of stores (twenty-five pounds to the hive is what I desire to allow for each colony) after the equalizing, I feed honey to make up the deficiency; for from past experience I find (although some tell us differently) that bees winter much better on honey than on sugar syrup. If sugar is to be fed, I prefer to do it in the spring if any colonies are short of honey at that time, as was the case last spring. A year ago my colonies only averaged seventeen pounds per colony, of stores, so I had to feed in the spring. However, I would feed sugar for winter rather than buy honey promiscuously, as such purchasing is quite liable to result in foul brood in the apiary, which disease is far worse than a loss in winter. After having all fixed as to stores, bees, etc., the next thing to do is to put on the cushion and snugly tuck them up for winter. Those to be left on summer stands are in chaff hives which chaff is left in the hives both winter and summer. Over these I prefer a cushion three to four inches thick, made of common factory cloth, filled with dry, fine, basswood sawdust which I saved when sawing sections in the winter. Such cushions seem to keep the bees in better condition than anything previously tried. When winter sets in, a board about eight to ten inches wide is set up slanting from the alighting-board to the hive, in front of the entrance, to keep out snow and cold winds as well as to shade the front of the hive, so the

bright rays of the sun shall not entice the bees out when it is too cool for them to fly.

I also prefer to winter a part of the bees in the cellar, for I like the idea of "mixed wintering," as by this plan no extreme loss is likely to occur; for a winter which is severe on the bees out-of-doors is generally good for cellar wintering. The bees are set in the cellar about the middle of November and the hives are piled one on top of the other, the caps being left on the summer stand. In this way the cellar is filled full, except a passage way through the centre to the back end, through which I pass once every two weeks to see if all is right, as far as temperature, mice, etc., are concerned. Otherwise they are left undisturbed, unless a whim seizes me to peep in to one or two colonies for the curiosity of the thing. The temperature of the cellar is kept at 43° to 45°. Once every month I carry in a two-bushel bag of the same sawdust referred to above, and scatter it in the passage way and between the hives as far as I can, to take up dampness and keep the dead bees from moulding; in this way all is kept sweet and nice.

Borodino, N. Y.

No. 6.

CHAS. MUTH.

SAFE WINTERING OF BEES.

WINTERING of bees remains still an unexhausted subject because different men at different times and under different circumstances don't do things alike in spite of their pretensions. We have heard it stated that parties never lost a colony for years when, another winter, they would lose the best part of their apiary, although the bees had been prepared in the same manner every time. Very few men acknowledge their mistakes, either from ignorance of the same or a misplaced pride.

Since modern bee culture taught us to increase our product five or ten fold, it is obvious that we had to encroach somewhat on the natural instinct of the bee for which we must make up when winter begins or suffer the consequences.

A swarm in good normal condition, hived in an old-fashioned box-hive, with pebbles or small blocks under its corners will build combs fifteen to twenty inches long. Brood will be raised in the lower-half or lower-third of these combs while the upper parts will be filled with honey which remains there for a safe deposit because the keeper can't get at it. The hive open below, and with eight to twelve inches of honey above the cluster, is the talisman against hard winters. The bees need never leave their cluster but keep gradually moving upward as the honey within their reach gets consumed. The winter may last a month longer than usual and there are still a few inches of honey above the cluster. The hive open below admits of no accumulation of moisture; consequently of no mouldy combs and no sour honey. It has (or may have) lots of bee-bread, but the bees never die of dysentery. Such were the colonies of my grandfather. He had colonies twenty-five years old with the ends of combs as thick as a finger resting on the plank below. There was no end to them. He did not get much honey but any number of swarms, and he could go at any time and bring in a nice piece of comb honey, at the advent of the visit of a friend. He never lost bees in wintering, unless they were cases of starvation, when, for instance, late swarms were unable to obtain their winter stores; or when, after the superseding of a queen, the young queen had been lost and moth took possession of the combs. This would happen at any time of the

year. He knew nothing of spring dwindling nor of bee diarrhœa. Whenever, at the approach of winter, his hives were heavy enough, they were good for the next season, and there was no doubt about it. Why does not this same rule hold good with us modern beekeepers?

Since the introduction of the movable-comb system we have learned that the most honey can be produced above a shallow brood-chamber. We have adopted, therefore, the Langstroth hive, which has frames just deep enough for safe wintering, with a brood-chamber large enough to accommodate a good prolific queen and with a large surface for supers immediately above it.

Those shallow brood-frames are an encroachment on the natural instinct of the bee, but they answer our purpose. We deprive the bees of those stores which mother nature teaches them to place above their brood and we must arrange in some manner to give them a plenty within easy reach of their cluster during winter. Every comb in their brood-chamber should be well filled with honey, with the heaviest combs nearest the cluster. The best covering of the brood-chamber is straw or its equivalent as an absorbent and a good non-conductor of cold. And if the brood-chamber is covered with boards, *i. e.*, the boards being next to the cluster, they should have an extra covering to guard against the cold. The entrance should remain open to its full width and the hive should have a slant of at least two inches so that all the water created during cold spells has to run out.

Oil-cloth over the brood-chamber is as unnatural a covering as a rubber blanket would be on our bed. There would be no end to the moisture. The one would give us rheumatism while the other would bring mouldy combs, sour honey and dysentery to a colony of bees.

When preparing bees for winter, the presence of pollen, honey dew and even sweets from cider mills is of no moment. The only essentials are a good strong colony within easy reach of the cluster and a dry abode.

Cincinnati, Ohio, Sept. 2, 1886.

No. 7.

I. F. Bingham.

The first requisite to successful wintering is 30 lbs. net early stored honey, which has remained capped all summer in the hive in which the bees are to winter. The next is a loose or movable bottom-board on which between the combs and said bottom-board can be placed a rim, the shape of the hive and two inches high, on which said hive shall stand.

This will give an open space of two inches between the bottom of the combs and the bottom-board or bottom of the hive—for the bees to cluster in and to drop should a few die—and for the free circulation of air to expel such dampness as may occur. In this rim, on one side should be a long and high entrance. Thus fixed, nothing more can be done, but to take them into a deep, warm cellar where there will be no frost or light on the approach of the first snow storm or cold weather. Don't wait to let them have a fly after snow goes off; for a colony will rarely fly, even in a mild day, after snow falls or winter sets in, until January or February. They do not care to fly; so will not.

If not put in a cellar of the kind described, leave them in the yard and enclose in a small house which will hold two or three colonies and pack with fine hay or chaff seven inches deep all round and beneath, and from twelve to fifteen inches over the top of the frames. No hive cover nor ventilation need be given except a spout eight or nine inches long

leading through the packing for a fly hole and air. The spout should slope down from the hive out and leave a hole or passage one inch at the outer end and five or six inches wide when it enters the hive.

The above plan has been a success with me for ten years and I know of no plan so good.

It will be observed that fall honey is not the food to winter bees on safely; that thirty pounds will keep a good colony from October till June; that the bees and hives are free from the rain and dampness of winter with abundance of air below them and no danger of a closed entrance.

Abronia, Mich.

No. 8.

G. W. DEMAREE.

I do not presume to write on this subject for the benefit of all beekeepers in every condition and climate. The writer who presumes to do so deceives himself, and what is worse, he deceives many others. When preparing bees for the winter months, locality and climate must be taken into consideration. Anywhere in Kentucky bees will survive the severest winters if they have dry quarters and an abundance of winter stores. I know this to be true from long observation. But merely to bring bees through the winter is not necessarily wintering them well. Thousands of colonies are wintered in Kentucky, just as the bees and the hive chance to be in at the close of the honey season. No matter how many boxes, or how many frames the bees may have access to, it is very common to leave them to pass the winter undisturbed. Last winter, as cold as it was, I wintered a number of colonies in two story L hives, containing nineteen L frames, ten below and nine above. These colonies wintered better than some I had confined to the lower stories of chaff-hives.

For this climate, chaff-hives are a failure. I have had a dozen or more in use in my apiary for seven or eight years and they have not done as well as the single-wall hives. I think the reason for this is, the bees in chaff-hives are deprived of the intervals of sunshine on the south sides of the hives, which in single-wall hives enables the bees to rouse themselves sufficiently to change their position and take food to sustain them through the cold nights and cloudy days.

In my opinion, for this climate, the best preparation for bees in winter is "protection" on the north sides and west ends of the hives, causing the single walls on the south sides to be warmed by the sun when its life-giving rays pour through the rifted clouds to cheer mother earth and give the bees new hope and new courage.

THE EFFECTS OF BAD WINTERING.

The effects of bad wintering in this climate are weak colonies; weakened in numbers so that they build up slowly at the start in the spring, which results in few field workers and a great deal of brood and young bees to feed during the early part of the honey harvest which materially cuts down the surplus yield. Nothing can be more discouraging to the apiarist than to see a large portion of his colonies wasting the best of the honey season rearing brood that can be of no service after the honey season has passed.

THE CAUSE OF WEAK COLONIES.

I do not care to notice or controvert all the theories which have been persistently advanced to explain and account for our winter losses. In this climate the chief cause of mortality in wintering our bees is scattered stores in the brood nest or in the hives as the case may be. Under

these conditions the bees are sometimes cut off from their stores by sudden changes in the weather, or the clusters become broken and the bees scattered about in the hives and are liable to lose their lives by being chilled when sudden changes in temperature take place.

DIARRHŒA IN BEES.

The trouble known as diarrhœa or dysentery, to which bees are subject under certain conditions, is one of the most difficult conditions to deal with in many localities. It is caused by those conditions which are unfavorable to healthful exhalation from the bodies of the bees while confined in the cluster; and since the trouble is climatic, and no more a "disease" than a "bad cold" is, it is exceedingly difficult to deal with. Controlling the temperature surrounding the bees is the only known remedy. Some years ago when I announced my convictions in an article published in the Kansas Beekeeper, that bee diarrhœa was a climatic trouble, and that the true cause was continued low temperature, the suggestion was met with scoffs and jeers on the one hand, and with incredulity on the other. It was asserted that pollen was the prime cause and all other causes were secondary; and when Prof. Cook decided that the "pollen theory" was "scientific," it looked as if all opposition must give way to the "pollen theory." Some of us knew better, however. For one, I do not suffer myself to be driven from the anchorage of common sense by finely-spun arguments and assertions of unsupported facts. Napoleon's wave of the hand to the starlit skies and his prompt "very well, gentlemen, but who made these?" is a very good lesson. I have seen diarrhœa only when the winters were excessively severe, and no signs of it when the winters were moderate. These are facts that outweigh all the arguments and assertions that ever passed the lips of man. But then, new light has been shed on the subject since then, and it is now admitted that bees are comparatively safe from diarrhœa if the temperature is kept up to 45° (or more) degrees. No one denies this now, and to this extent the wintering problem is settled.

My advice to the practical beekeeper is to turn over to the moles and bats all "theories" and "sciences," and proceed to prepare the bees for winter in such a common sense way, as will meet the requirements of his locality and climate.

Christiansburg, Ky.

No. 9.

A. E. MANUM.

LET US REASON TOGETHER.

How widely people differ in their opinions in the discussion of this very important question. Like the various religious creeds all aim to the one important point, viz., *truth*. Yes, truth when once discovered and adopted by the beekeepers, the great problem of wintering bees which is now agitating the minds of our leading apiarists, will be as clear as the noon-day sun; and when looking back to the days of our ignorance we shall wonder that we allowed ignorance and darkness to prevail so long. But it seems to be the destiny of man that he shall pass through a course of ignorance and darkness in order that he may be prepared to receive and enjoy the glories of *truth*. It is amusing sometimes to notice the different opinions and theories advanced by certain apicultural writers upon the winter problem; yes, and while their theories and methods seem absurd to me, they, on the other hand, are doubtless disgusted with what seems to them *my* foolish and impracticable notions: but, Mr.

Editor, who are the most successful in bringing their bees through the winter? When these successful men are found, they are the ones we should look up to for advice, just as we would go to a successful physician for advice and treatment in case of sickness. Yet it is impossible for one person to know it *all:* therefore nearly all have some good ideas and if we will but gather up the best fruit from the various ones we shall in time reap a harvest of ideas that will make us rich in knowledge, and the winter problem will be solved. Hence, let us reason together and each give his best thoughts and methods that we may all be benefited thereby.

While I am always willing to give the public my methods in any and every department of apiculture, I do so with some hesitancy owing to the fact that there are so many beautiful writers in our ranks that I always feel that my articles are so imperfect that I sometimes fear they are a detriment to the brotherhood. Yet I have such an interest in the success of every beekeeper that I feel like giving my opinion upon this important subject until it is rejected, although if this article had not been solicited, I would have kept quiet for the present.

HOW TO SUCCESSFULLY WINTER BEES

is a subject to which I have given much thought and time by experimenting, and for the past eight years I have been quite successful, as my greatest loss in any one season in the eight years was less than four per cent, while last winter my loss was less than two per cent, and the average for the eight years being less than three per cent.

There are beekeepers who claim to have wintered their bees year after year without loss; this I have not yet succeeded in doing, although I think I have solved the problem of wintering bees successfully; and, were I able to handle my 800 colonies and prepare them for winter myself, and with a view of accomplishing the one object of wintering every colony, I think I could do it (baring accidents); but as it would require more work on my part than I care to undertake, I prefer to employ help and relieve myself of so much hard work and consequently run more risk in having the bees come through safely.

Now we see a great deal of theorizing going the rounds of the different periodicals, regarding this vexed question: such as the "pollen theory," "warm, damp cellars," "cool, dry cellars," "air tight cellars," "caves," "clamps," out- and in-door methods, upward or no ventilation, etc., etc., all of which have some good features. But it is often the case that beekeepers put too much stress on some *one good point,* and losing sight of other necessary requirements to make the one point a success. For instance, the "pollen theory" is all right in the locality where it originated; there the bees gather an excess of pollen late in the fall, and where bees are not properly cared for, the pollen will ferment, and the bees wishing to get rid of it will undertake to remove it, making a bad matter worse; and I dare say in very cold weather they may consume some of it, which will cause them to have the diarrhœa, when if this excess of pollen was removed and good clean combs put in the place of those removed, I believe it would be beneficial to the bees. But all things considered, I venture to assert that pollen is not altogether the cause of the so-called bee-diarrhœa. I believe that when bees have good wholesome honey or sugar syrup, in a good double-walled hive well packed, with the brood-chamber contracted in proportion to the size of the colony, and then left undisturbed until spring, there will be less cause for complaint than there is now.

My method of wintering is very

simple, and here let me say that a great many men fuss with their bees too much, working contrary to the natural requirements of the honey bee, while others pay too little attention to them.

I aim to have all my colonies supplied with good vigorous queens by the first of August, and to have all brood hatched by October 1st, that all the young bees may have one or more flights before winter sets in, in order that they may become matured and strong. I do not want *babies* for the hardship of our cold northern winters; in fact, I prefer bees for successful wintering that hatched in August to those hatched in October. Could I have my own way, I would not attempt to winter a single bee hatched after September 1st. As I have told you before, I see to it that my bees are all supplied with stores by October 15, after which they are not disturbed until winter sets in, when the hives are packed with *dry* planer shavings on the four sides and top, and left on the summer stands, where they are left undisturbed during the entire winter, except during a thaw, when the entrances are examined to see if they are clear so that the bees can have a flight if they wish.

In conclusion, allow me to say that it is my opinion that the so-called bee diarrhœa is caused:

1st, by the young baby bees that are too young and weak to withstand our long cold winter.

2nd, by allowing the bees to have too much unripe and unwholesome fall honey and honey-dew, both of which are detrimental to the welfare of the bees. Not only is the late gathered honey itself injurious, but the gathering of it uses up the vitality of our August bees to such an extent that they are not strong enough physically to withstand our long winters, unless the very best of food is furnished them; and here comes in the *truth* as to the "pollen theory." These old bees being so nearly exhausted at the commencement of winter, they are forced to consume a large amount of pollen in order to keep up their physical force which is necessary to generate heat sufficient to keep the cluster warm, which cluster (in this particular case) is composed largely of very young bees (baby bees I call them) hatched just as winter sets in, when, if no late honey had been gathered, there would have been no rearing of brood after September, and our August bees would not be worn out in gathering said honey, so they would have been in full vigor and strength for winter, and no *baby bees* for them to over exert themselves in protecting.

P. S. Judging from the present outlook, I venture to say that bees in this section will not winter well the coming winter, owing to the fact that they are gathering too much late honey and rearing too much brood late in the season. There will be too few August bees in our hives at the commencement of winter.

Bristol, Vt.

No. 10.

JAMES HEDDON.

URGENT request is my only excuse for again coming forward with a subject upon which I have already said so much. I dislike to write upon it again, the more because I have had no reason to change my former opinions regarding our winter losses — opinions which I have as clearly set forth in other papers and in my book as I can do here at this time. However, I will repeat much of what I have before stated, trusting my opinions may be new to some of your late subscribers.

As many of you know, my observations have compelled me to believe in what is known as

THE POLLEN THEORY,

which I believe we may now cease to call a "theory," as it is a well-established fact that the excreta resulting from bee diarrhœa, which is the one great cause of mortality in winter, is composed almost wholly of pollen.

I will now proceed to tell you, first, what I know, second, what I believe, and third, what I am in doubt about connected with this subject.

First, as above stated, I know that all diarrhœtic excreta is replete with pollen; that bees will not suffer with the disease if their winter diet is confined to properly prepared, pure, cane sugar syrup; that a normal colony of bees thus supplied and placed in a dry, well ventilated repository in which the temperature never falls below 50° nor above 55°, with the hive properly covered, is surer to come out in spring in a more perfect condition than do our horses and cows; that bees will sometimes winter perfectly in a very damp atmosphere; likewise, in a high temperature, or one as low as 30° or 35°, providing the food is as above described; that in the line of possibility we have mastered the problem and *can* winter any or all of our colonies with certainty.

Second, I believe that a low temperature is the most common and potent indirect cause of the disease, because it compels the bees to exercise in addition to their other means of keeping up their temperatures, and this exercise begets a waste of tissue which the bees endeavor to replace by consumption of nitrogen-pollen; and that whenever this pollen is taken into the intestines, an opportunity to discharge it must soon occur, or diarrhœa will result; that humidity is not detrimental to successful wintering provided the temperature be kept proportionately higher; that bees do not normally discharge their fœces in a dry state; that some honeys contain much floating pollen that the bees inadvertently consume when consuming the honey; that while floating pollen is more or less in nearly all nectar, the most common manner of mixing is soaking up with it, where the honey is placed in cells that are first partly filled with bee-bread.

I believe that if we knew the exact influence of each condition bearing upon the problem, we should find it true that, although we cannot winter our bees perfectly, *i. e.*, without any fecal accumulation whatever, we can winter them practically successfully upon natural stores, if we secure just the right combination of conditions surrounding them. I should have said that we all know such is the case, but it seems that the fraternity is not yet satisfied that any person knows that combination. In fact there are but few who believe that any combination of conditions will secure universal success, where natural stores are used. I believe that there is no locality in which bees cannot be wintered successfully upon the natural stores of that locality, if the right combination of conditions for that locality be maintained. Now as honey is quite cheap, and, with many, difficult to dispose of, I favor extended experiment in the direction of success with natural stores, for all of us who are not already able thus to succeed.

Third: under this head I may group many things together, without mentioning any of them specially by repeating that I do not know, nor have I any specific or settled belief regarding just the right combination of conditions with which to winter my colonies successfully upon natural stores.

Last winter I devoted most of my colonies to experimenting in this line and shall repeat it the coming winter in high hopes of reaching the desired result, which I shall be glad to

present to your readers in due time. Although I have been a constant reader of nearly all of our journals, and have experimented for eighteen years, I have failed of success, when adopting as nearly as possible, the exact conditions reported as successful with others. I had begun to believe that nothing short of artificial stores could secure practical success for me, but more recent developments have encouraged me to inaugurate another series of experiments, which as above stated are already begun.

In my book, in the chapter on wintering, I have detailed the chemical analysis and other experiments which compel the opinions herein set forth, and so have deemed it economy of time and space to exclude them from this article.

Dowagiac, Mich.

No. 11.

C. W. DAYTON.

As my time for the preparation of an essay on this subject is limited, and as it would require a volume to properly examine the points bearing relation thereto, I will not take pains to construct and sort so much language but will give in a plain and brief way some of the methods I have practised and by which I have succeeded. I might say that though I have always found the road to success to be very plain and straight, I varied it so far and so often that it would be hard to tell whether I wintered as many bees as I lost.

Perhaps it is correct that the difference between success and failure in apiculture is bee diarrhœa and 99 per cent of the cases of diarrhœa are caused directly or indirectly by the condensation and accumulation of moisture. This being so, the prime consideration is the prevention of moisture, and how I prepare the colonies to accomplish this, is what I propose to tell. To tell how I *might* winter them or how I *might not* winter these would be too much to put in one article.

The first of importance in preparing a colony for winter, is to see that the stores are pure and wholesome, and after this it is simply a matter of ventilation.

In providing the ventilation of the hives in cellar wintering, it will be the most easily done to suit different sized colonies with the temperature at about 45°, and while very strong colonies would winter well with the whole top of the hive open, a small colony would be almost sure to die, and therefore should not be ventilated so much, or else the temperature should be higher than 45°.

As the temperature of a cellar cannot be adjusted to suit different sized colonies at once, I find it best to vary the thickness of the coverings to the brood-chambers which sometimes was from a burlap to a cushion of chaff. I have read of wintering with naturally sealed brood-chamber, but as a hive, as sealed by the bees, is a long way from being water-tight and as where it is placed in the cellar, it becomes more and more so, in accordance with the dampness of the cellar, it is reasonable to suppose that the reports of wintering without some kind of upward hive ventilation were mistakes. Out of a hundred or more colonies prepared without upward hive ventilation, I have been unable to get one decently through the winter, while whole apiaries having upward ventilation wintered perfectly without any loss.

Of the many ways of wintering on the summer stands the one I prefer is to bank around and extending over the brood-chamber six or eight inches of forest leaves and then cover with a foot or more of dirt. Of course, there should be a passage from the entrance to the outside air so the

bees can fly on warm days, and another very important point is to leave a small space of the leaves directly above the bees uncovered with earth so as to produce a slow circulation through the hive. A thin cloth may be spread over the hive to support the leaves, but I have had good success when they were spread directly on the brood-frames. Forest leaves I consider the best of all materials for packing bees as they allow the circulation to penetrate farther away from the cluster of bees before condensing and consequently will take up or dispose of a greater amount of moisture. Of the different kinds of forest leaves, I prefer hard maple. Forest leaves do not harbor or entice mice as do the other materials. While I have practised out-door wintering for several winters by this method I have yet to lose the first colony. The coming winter I shall try 100 colonies in that way. Preparing bees for winter is a plain, simple and easy undertaking. One who understands wintering can easily tell how to do it in a few plain and simple statements; but for one, who has not years of experience, to follow the same easy directions and apply them as correctly is entirely a different matter.

Bradford, Iowa.

EDITORIAL NOTES.

The Winter Problem.—The patrons of the *Apiculturist* will be more than pleased with the contents of the present number. The authors of the essays on "Wintering Bees" are men well known to all our readers. What they say is not mere theory, and any novice or old beekeeper can safely adopt and put in practise any of the methods herein given for wintering bees.

All the writers do not agree as to the best food for wintering bees, still there is no serious clashing of ideas and suggestions.

Professor Cook thinks if bees can take a flight often in the winter they will winter successfully, no matter what the food is. Yes, we have often so stated, and our experience, year after year, has demonstrated the fact. We have always noticed that when bees had a good cleansing flight in February they were pretty sure to go through the winter in fine condition. This suggests one of the advantages of wintering bees on the summer stands. Colonies well packed early in October, and left on the summer stand, will usually winter well in most sections.

Mr. Doolittle's idea of standing a board against the front of the hive is a good one and one we have practised for twenty-five years. The board not only keeps the snow from closing the entrance to the hive, but keeps out the light and shades the hive from the sun late in the winter and thus prevents the bees from coming out for a flight when the temperature is not warm enough for them to do so with safety.

We are personally acquainted with Mr. P. R. Russell and know that no beekeeper has better success in wintering bees. Early in May, the last two years we have purchased bees (about fifty colonies in all) of Mr. Russell. We found his hives full of bees and the combs solid with brood,— a fact attesting to his method for wintering bees.

If any reader of the "Api" loses his bees in wintering after this, it must be from carelessness or because he did not carefully read this number of the *Apiculturist*.

The National Convention, which meets at Indianapolis this month, should take some action regarding the matter of disposing of surplus honey. We suggest for the consideration of the meeting that the sum of $5,000 be collected from the beekeepers throughout the United States and paid to the person who will devise some method for converting honey into sugar similar to granulated sugar. We believe it can and will be done, provided a proper inducement is held out and a sum sufficient is offered to compensate for the time, trouble and expense of conducting experiments.

The above sum can be easily raised from the beekeepers of this country. Small producers might pay $1 and larger ones as high as $5 each. We respectfully submit the above suggestions to the convention for its consideration.

The Honey Market.—Detailed reports of the honey market—from all sections except San Francisco—will be found on another page. We intend to give our readers such reports with each issue of the *Apiculturist*. The reports in most of the papers do not satisfy the producer. They are too brief, and do not seem to particularize sufficiently to make them interesting and satisfactory, or of any great value to those who have honey and wax for sale.

We requested dealers to make any suggestions regarding large or small packages of honey, and to state the demands and what is desired in order to make honey sell more readily and at better prices. Those who read these reports will be posted and ready to take advantage of the market at any time.

A New Bee Paper.—Some enterprising person has started a new bee paper, somewhere in Maine. We pity the poor fellow, as we well know what a bitter experience he must pass through before such an enterprise can even look like success. All that is needed to keep the paper running several years is a fat pocket-book. We can assure our friend that he never will succeed; that is, the money invested and expended in the publication of a "bee journal" will never return. As we stated a few months since, the bee-keeping public will not liberally support any bee publication; no matter how ably edited and conducted. When A. I. Root cannot get and hold 6,000 subscribers out of his 100,000 customers, other bee journals must take and keep a back seat so far as success is concerned. Go ahead, put out your money, some one will be benefited thereby at your expense! We hope you will succeed, but we well know you will not. Mark the prediction!

"What's in a Name?"—Mr. Thomas G. Newman, editor of the A. B. J., complains, and justly too, because some of the newpapers devoted to bee culture use the words or name "Bee Journal." There may be some advantage in adopting the name of an older publication, yet we did not so view the matter when the "*Apiculturist*" was first thought of as we consider "*Apiculturist*" the most appropriate name applied to any publication devoted to beekeeping, and it was one of Mr. S. M. Locke's most brilliant thoughts and ideas when he named his paper "*American Apiculturist*."

While some of these new papers have tried to "steal a march" on Mr. Newman by using the name of his journal, others (two of them) have borrowed the word "friend," so gracefully and much used by Mr. A. I. Root.

As Mr. Root was the first person or first editor, we might say, to use the word "friend" when writing to his correspondents and customers, also in his editorials, we do not see anything out of the way, in fact we rather like it; but when other editors use it so much and so often in such a "soft-soapy" way, it is altogether out of place.

The October Number.—We are receiving a large number of calls for copies of this number. To those who send us ten cents for a copy we will continue to mail the "Api" one year on receipt of ninety cents more, thus making it the regular subscription price for one year. The present number is a specimen of what all may expect to receive during the coming year.

Every copy of the "Api" will contain information worth more than the price of one year's subscription to any beekeeper; when they do not, then we will discontinue publishing the journal. Send in your subscription and renewals and thus invest in an enterprise that will pay you 500 per cent every year.

Linen Foundation.—We have received from Lake Bros., Catonsville, Maryland, several samples of foundation made on linen cloth. If such a device will obviate the stretching and sagging of foundation, the manufacturers of such goods will have all the business they can well attend to. We regret that the foundation did not come to hand several weeks earlier so that we might have tested it and reported through the "Api," the result. The samples were very nice and equal to any sent to the *Apiculturist* office this year.

A Physician says: "When a teaspoonful of warm honey is taken every fifteen, twenty or thirty minutes, it has a surprising effect on catarrh. Every family should have a glass of pure honey in the house in order after catching cold, to be able to use some at once.

Subscriptions and Renewals.—Every mail brings us more or less new subscriptions and renewals. To all such we will send one tested queen for 50 cents in addition to the one dollar for one year's subscription. If you do not need a queen, we will send a copy of the third edition of the Bee-keepers' Handy Book by mail for 50 cents to any subscriber or on receipt of 40 cents ($1.40 in all) the Apiculturist will be sent one year and a sample of the improved Drone and Queen-trap.

We desire to retain on our list the names of every subscriber and as an inducement for all to renew and to new subscribers a discount of from twenty-five to fifty per cent will be made on any one article found in our list of supplies. Our price-list of apiarian supplies will be found in the last pages of any number of the "Api."

Book of the Dog.—We have received from the Associated Fancier's, 237 South Eighth Street, Philadelphia, a copy of their Dog Buyers' Guide. It contains a finely executed colored frontispiece; well-drawn engravings of nearly every breed of dog, and all kinds of dog-furnishing goods. We should judge that the book cost to produce a great deal more than the price asked—15 cents—and would advise all our readers who are interested in dogs to send for the book.

Questions and Answers, Letter Box and **Notes** from the **Bay State Apiary** are crowded out this number in order to make room for all the essays on **"Wintering Bees."** We have a large number of Questions and matter for the Letter Box all of which will receive due attention in later numbers.

The Apiculturist will be discontinued at the expiration of the time it is paid for, unless we are requested to continue it. If any subscriber is not prepared to renew at once, we will send the "Api," provided you notify us that you desire the paper continued. Subscriptions may commence with any number.

A Correction: Mr. Doolittle says our "typo" made him say one-inch wide frames, when he said or meant to have said *two*-inch wide frames. We find that the "typo" made a blunder in Mr. Jones' letter to Mr. D. by transposing the words in the third line thus destroying the sense. There is nothing perfect and this applies much better to printed matter than to anything else we know of.

Our Orders—Every order we have received for queens and other supplies has been filled. If any one has ordered queens or other goods and have not received them, they will oblige by notifying us at once, before the supply of queens gives out. We still have about 150 choice queens on hand, and can fill a few more orders if sent in soon.

Discount on Prices of Supplies.—We are prepared to fill orders for any kind of goods found in our price list, and a liberal discount will be made to all customers who will purchase this fall or at any time before Jan. 1.

Discount 1887 as follows: one dozen Drone and Queen-traps, one made up (thirteen in all) $2.75; regular price, $3.50. Sample, latest improved, by mail, 50 cents; regular price, 65; or Trap and Apiculturist, one year, $1.35.

Queen-nursery, 18 cages, which Mr. Doolittle says is the best he has seen, by mail, $1.25; regular price, $1.60.

We intend to sell goods very cheap from now until Jan. 1, 1887, and a most liberal discount will be made on all goods except the Bay State Reversible Hive; the price for that is as low as we can place it.

LATE-GATHERED HONEY.

QUESTIONS BY THE EDITOR.

1. Sometimes during a wet fall the bees gather honey that is very thin and watery and unfit for winter stores. Where this is the case, what should be done?

2. We will suppose it is as late as September 10 and the combs are full of unripe honey. Now, knowing that this honey will not properly ripen or be capped owing to the lateness of the season, would you advise removing it with the extractor and immediately feeding the bees with wholesome sugar-syrup or pure honey?

3. Have you ever fed bees late in the fall? What was the result? Do colonies fed late, say as late as October, winter well?

4. Have you not found that uncapped honey sours and runs out of the cells long before the bees can fly in the spring? and is not a colony pretty certain to be ruined under such circumstances?

ANSWERS BY G. W. DAYTON.

1. When I prepare the colonies for winter it is an extreme case where I leave more than six combs in the hive; four and one-half is near the average. When there is much thin and uncapped honey contained in the combs I take out the side ones and put full combs of capped honey in their places, leaving two or three of the combs of thin honey in the centre which will usually be consumed before winter sets in; or, being in the centre of the cluster, will be evaporated and ripened. If I had no combs of capped honey (reserved from white clover or basswood) I would crowd the colony upon as few combs (perhaps two or three) as possible, and cause the bees to carry the honey from the extra combs by placing them behind division-boards, until the two or three were solidly filled. Managed in this way and in season, honey is scarce that will not become wholesome for winter stores; and being covered and protected by bees, it cannot gather moisture to cause it to sour and run out of the cells.

2. The above will usually hold good as late as Oct. 15. Last year the bees could have ripened honey as late as Nov. 10, but the year before not later than Oct. 10, so a great deal will depend upon the season and weather and must be left to the judgment of the apiarist.

I deem capped honey as but a step better than uncapped honey. With pure stores and the right and sensible protection for a normal colony, success is certain. When their stores are unwholesome, they should be furnished with something that *is* wholesome. In the case of a strong colony, I should feed honey and to a small colony thick sugar syrup with few combs in the hive.

3. Have fed bees within five or ten days of cellaring, or the setting in of winter, almost by the hundred colonies, and where the other conditions were favorable the bees wintered well, and where the other conditions were unfavorable the results were of disaster.

I have known *many* very late-fed colonies having uncapped honey to winter "tip-top."

4. When uncapped honey is scattered about in many combs it is exposed to moisture and generally sours; capped honey sometimes does the same, but neither kind of honey will do so if it is in a dry place or near enough to a cluster of bees. For this reason a cellar should be dry to prevent the accumulation of moisture, and the hive should be contracted and ventilated to avoid the presence of moisture.

If I had no wholesome honey then I would feed sugar.

5. Yes, but such circumstances may be avoided by proper preparation for winter as given above. The harvesting and marketing of the early honey with the expectation of a fall flow for winter stores is comparable to "counting chickens before they hatch;" and the one who leaves his colonies until it is too late for the bees to move and ripen honey before preparing them for winter was not cut out for an apiarist and can get honey cheaper by sawing wood and digging potatoes than he can by dabbling with bees.

To feed and prepare a colony for successful wintering under the conditions mentioned requires much experience.

For the American Apiculturist.

BEEKEEPING FOR WOMEN.

MRS. SALLY E. SHERMAN.

THERE are several reasons why more women should engage in beekeeping than are now following that vocation. In the first place they could by this means furnish their own tables with that purest of all sweets, honey, which is undoubtedly

one of the most healthful articles of diet that man can eat, as well as one of the most palatable. It should no longer be considered a luxury but a necessary article or food daily upon everyone's table in this broad land of ours. While out in the open air and bright sunshine attending to the bees, you would almost without knowing it grow stronger and really enjoy life better than being in-doors so much, stooping over the sewing machine, doing so much unnecessary work. You can learn a great deal by watching the ever-busy little workers who so soon wear their lives out by incessant toil and give place to others whose lives are spent in the same way. To be successful we should familiarize ourselves with the flowers of our locality: the time they begin to bloom and their duration. We should make a note of this for several years and keep it for future reference. There is great difference in the time the same plant blooms in different locations. I notice reports in the Bee Journal from different parties who state that sumach bloomed in June and July. With us here in middle Texas, it is the first of August before it blooms. Methinks I hear some sister say, "Oh! I should tan so if I were to work with bees. I should have to be out of the house so much that I should hardly be fit to go out into company." I'll tell you that you would feel so much stronger and more independent too, that you would not think that a valid excuse after a few years in the business, and I don't believe that you would willingly give it up. Mind, I don't say for every woman to undertake it, for all are not adapted to it and would not succeed. You must have pluck and perseverance and determine to make a success of it at all hazards. If you fail once or twice try again. Don't wait until your bees get to swarming before you study your text book or have a hive made, but always try to be prepared for any emergency that may arise. Do not be discouraged if an occasional poor season comes, for come it will in almost every line of business in which we can engage at some time. By all means have an observatory hive and watch it closely. It is a thermometer to your apiary. Mine has been worth many times what it cost, to say nothing of the great pleasure it has afforded me. I know exactly how everything is managed inside the large hive. This I have learned by watching the bees in my observatory. I don't know anything that will pay better for the outlay that a woman can engage in, that is dependent upon her own resources for a living than beekeeping. If you cannot always sell your honey for the cash, you can, or at least I can, barter it off for bacon, lard, corn, wood, cotton-seed for feed for cows, or for work for which I would have to pay the cash: so it really answers my purpose just the same as cash. By this exchange many persons eat honey who would not if they had to pay the cash for it. I realized from my fifty-eight colonies of bees last year $300. This year so far, Aug. 18, 1886, only $52.50. We have not had a good rain since Easter Sunday, April 25. I have now sixty colonies and hope to get them all pure Italian this season. If I succeed I shall try and be satisfied. I explained in my last article in the "Api" the cause of failure in the honey crop in this portion of Texas. I have no idea of giving up the bee business on account of this year's failure, for it has certainly been a very remarkable season, and I hope that it will not be repeated in many years. I have learned a good deal this year and hope to learn still more before the season closes that will be of use to me in after years. I would recommend the Italian bees. They are far superior to the common native or black bee. I think that I am safe in saying that fully one-third of the native bees

in this part of Texas have died this year from sheer starvation, while what few Italians that are here have yielded some little surplus with enough still in their hives to winter on while the blacks are still starving. A few such seasons as this and there would be no native bees left in this country.

Salado, Bell Co., Texas.

THE NORTH AMERICAN BEE-KEEPERS' SOCIETY.

THE society will hold its seventeenth annual convention October 12, 13 and 14, 1886, at Indianapolis, Ind The meeting will be held in Pfafflin's Music Hall, 82 and 84 North Pennsylvania street; one of the most pleasantly situated halls in the city, with good ventilation and plenty of light. The society's headquarters will be at the Occidental Hotel, corner of Washington and Illinois streets, in the heart of the city and but a short distance from the hall. The regular rates of this hotel are $3.00 per day. Special rates for those in attendance at the convention will be $1.50 per day.

The Northwestern Beekeepers' Society, the Indiana State, the Eastern Indiana, with various county and joint societies will meet in union with the North American Society, making it one of the most favorable meetings of beekeepers ever held in the country. Everything possible will be done to make the meeting pleasant and entertaining. An earnest, cordial invitation is extended to all.

FIRST DAY — TUESDAY.

Forenoon session, 10 o'clock.—Convention called to order. Address of Welcome by Gov. I. P. Gray. Response by the president, H. D. Cutting. Welcome to the city, mayor Caleb S. Denny. Thanks, Dr. C. C. Miller, president of the N. W. Society. Calling the roll of members of last year. Payment of annual dues. Reception of new members and distribution of badges, reports of secretary and treasurer. Announcements.

Afternoon session, 2 o'clock.— Special business.—Annual address of the president; "Bee Studies," Prof. A. J. Cook, Agricultural College, Michigan; "Apicultural Journalism," John Aspinwall, Barrytown, N. Y.; "Bee Literature," Thomas G. Newman, Chicago, Ill; "The Coming Bee: What Encouragement have we to Work for her Advent?" R. L. Taylor, Lapeer, Mich. Subject for discussion, "Has Apis Americana been reached?"

Evening session, 7.30 o'clock.—Announcements. Miscellaneous business. Discussion of questions that may have accumulated during the day.

SECOND DAY — WEDNESDAY.

Morning session, 9 o'clock.—Announcements. Communications. Call of N. W. Society to elect officers. Election of officers of Indiana State Society. Call to order. "Rendering Comb into Beeswax," C. P. Dadant, Hamilton, Ill.; "Foul Brood," A. J. King, New York. Selection of place for holding meeting in 1887. Election of officers.

Afternoon session, 2 o'clock.—Announcements. Miscellaneous business. "Beekeeping and Apiculture," Prof. N. W. McLain, U. S. Apicultural Station, Aurora; "Feeding Bees for Winter," Jos. McNeill, Hudson, N. Y.; "Wintering," Dr. B. Mason, Wagon Work, Ohio. Subjects for discussion, "Is the Use of Foundation necessary in Modern Bee Culture?" "Are Perforated Honey Boards a Success?" Unassigned papers.

Evening session, 7.30 o'clock.—Announcements. Miscellaneous business. Discussion of questions in question box. Social communications.

THIRD DAY — THURSDAY.

Morning session, 9 o'clock.—Announcements. Miscellaneous business. Communications. "A Talk on Hives," James Heddon, Dowagiac, Mich.; "Reversible Hives and Frames," J. E. Pond, jr., North Attleboro, Mass.; "Drones and Drone Comb," W. Z. Hutchinson, Rogersville, Mich.; Reports of vice-presidents; "Progress of Beekeeping in Indiana," Jonas Scholl, Lyons Station, Ind.

Afternoon session, 2 o'clock.—Announcements. Miscellaneous business. Explanation of various articles on exhibition. Many good things are yet to be added to the program not sufficiently developed to give.

FRANK L. DOUGHERTY, Sec'y.

THE HONEY MARKET.

LATEST QUOTATIONS, SUGGESTIONS, ETC.

NEW YORK.

The honey market has fairly opened up, and the supply seems at present slightly in excess of the demand, as large buyers have not yet placed their orders. We have many inquiries for round lots, and are confidently looking forward to a good fall trade.

Strictly fancy comb honey will command good prices, as we find a large proportion of New York state goods are badly colored yellow, which will make a great deal of second grade honey. The feeling and tone of the market seems much improved in the past two weeks. One-pound sections sell more readily than two and command from two to three cents per lb. more.

Extracted in kegs and ½ bbls. seem most desirable packages for state goods.

California Ex. is nearly all packed in five gallon cans, two cans in a case, and is growing more in favor every year.

The following are our present quotations:

Fancy White 1-lb. sections, clean and neat packages 15 and 16 cts.
Fancy White 2-lb. sections, clean and neat packages 12 and 13 cts.
Fair to good 1-lb. sections, clean and neat packages 12 and 14 cts.
Fair to good 2-lb. sections, clean and neat packages 10 and 11 cts.
Fancy Buckwheat 1-lb. section, clean and neat packages 11 and 12 cts.
Fancy Buckwheat 2-lb. sections, clean and neat packages 9 and 10 cts.
White Clover Ex. in kegs and ½-bbls. 6½ and 7 cts.
California Ex. in 60-lb. Tin Cans 5 and 6 cts.
California Comb Honey 10 to 12 cts.
Prime Yellow and Beeswax 22 to 24 cts.

McCaul, Hildreth Bros.,
34 Hudson St.

CINCINNATI.

The market for honey is very tame. Demand from manufacturers is slow, and there is only a fair trade in new comb honey and extracted honey in square glass jars. Extracted honey brings 3½ to 7 cts. a lb. on arrival. Comb honey 12 to 14 cts., for good to choice in the jobbing way. Prices are low for all produce and no speculative feeling is noticed anywhere. Unless better prices are realized for other produce, prices of honey are not likely to advance.

Beeswax is in good demand and arrivals are fair. We pay 20 cts. a lb. for good yellow.

Chas. F. Muth & Son.

Cincinnati, Sept. 2, 1886.

CHICAGO.

Honey market is a little more active than it has been; best one-pound sections bringing 12 to 13 cts. per pound. Two-pound sections or about, 10 to 11 cts. the supply fully equal to the demand. Extracted, six to seven cents in kegs and barrels; and seven cents in cans 5 to 20 and 60 lbs. The small sized frame of comb-honey has the preference over large to the amount of eighty per cent in demand. With extracted, the trade is about equally divided, some will pay more for it in barrels than in small packages. Beeswax, choice grades 25 cts. per pound.

R. A. Burnett.

BOSTON.

We have received quite a supply of one and two-pound sections of Vermont honey and we are selling the one-pound at 14 and 15 cts., and the two-pound at 13 and 14 cts. Extracted, California, 7 to 8 cts. With proper handling we feel sure that the market will improve, as there is not over one-half a crop in Vermont and not over one-third a crop in New York. In reference to one or two-pound sections selling the best, we would say that one-pound combs sell the best, but some trade demands the two-pound combs. Extracted honey sells as well in five gallon cans as in any package we have had.

Blake & Ripley.

CLEVELAND.

Honey.—The market for honey has been quite dull of late, owing no doubt to the great quantity of choice fruit and its low prices. There is no material change in prices and soon as the demand springs up it will probably start as follows:

Choice White Comb in 1-lb. unglassed sections 14 cts., very fancy in same style 15 cts.; second quality 12 to 13 cts. Old, of which there is a small amount, 9 to 10 cts.

2-lb. sections are very slow indeed,

in fact will not sell in this market if 1-lb. can be obtained; the same is true of glazed 1-lb. sections however good, and the prices for these classes are nominally 10 to 12 cts.

It seems strange, but it is true that extracted honey can hardly be sold in our market in any shape or at any price. We usually quote it, but there is neither supply nor demand except a little for medicinal use at 5 to 7 cts. per lb.

Beeswax scarce at 25 cts.

A. C. KENDEL.

ST. LOUIS.

In reply to yours of the 9th inst. we quote: choice comb honey 12 cts.; latter, for choice white clover in 1-lb. sections. Extracted in bbls. 3 & 4 cts. Extra choice of bright color in 1-lb. packages, 3¼ to 4¼ cts.

Extracted in bbls. 4½ and 5¼ cts.

" " cans, 6 and 7 cts.

The market is very dull at present, the supply being in excess of the demand.

We look for higher prices, as all our correspondents report short crops this year.

One-pound sections of comb honey sell more readily here than any other size. Extracted and strained honey in bbls. are the the most desirable packages for sale in this section.

D. G. TUTT & Co.

MILWAUKEE.

Replying to your favor will say that at this time White Comb one-pound sections is 12 at 13 cents. White Comb two-pound sections 11 and 12 cents.

Ex. honey, wh., kegs & ½ bbls. 6 to 6½.

" " " tin cans 6½ to 7.

" " dk. kegs & ½ bbls. 5½ to 6.

" " " bbls. 5 to 5½.

The supply seems ample in this country for all demands. The production this season large and of very pure quality. Dealers prefer one-pound packages or sections above any other size. Unless honey was worth 25 cents per pound, think it will sell best, because at a moderate value any one can afford to pay for one pound of anything so *sweet*.

Think prices will not change very much here, from present quotations.

A. V. BISHOP.

KANSAS CITY.

Honey of all grades and kinds are plenty; or enough for the demand. The demand with us is good. We get all the California 2-pound comb we want selling from 9 to 12 cents a pound. 1 pound frame white clover 13 to 14 cents, dark 10 to 12. One-half pound frame hard to sell at 14 cents. One pound frames sell the best of any honey although 2-pound California at the low price sell well, one-half pound frames go slow. Extracted sells best in fifty and sixty pound tin cans. We are selling extracted white clover 6½ to 7½ cents. Dark 5 to 5½. White sage 5½ cents.

This crop is large in this part of the country but will all be sold. We have already sold about seven cans of honey, and trade is not fairly started.

Yours truly,

CLEMONS, CLOON & Co.

BELL BRANCH, MICH.

The honey market has been very good for this season of the year, and until quite recently the demand has been in excess of the supply, but comb honey has come in more freely of late and quite a supply is held by commission men; and in looking over the market yesterday find prices somewhat lower. Extracted honey has never been sold very extensively in this market, small packages selling the best, barrel lots almost unsalable. What I handle I prefer in five gallon tin cans.

Best white comb honey in 1-lb. sections, 13 cts.; larger sections slower sale and less price. I get 10 cents for white extracted in small packages; larger kegs and bbls. sell much cheaper and can be bought for 7 cts., packages thrown in.

W. H. HUNT.

New Philadelphia, O. July 15, 1886.

ED. AMER. APICULTURIST.

The honey crop of this section will be the largest that we have ever had, although many let their bees swarm from two to five times for increase and of course got little surplus, except from the prime swarm. But first swarms, coming before the tenth of June, have made an average of 50 pounds surplus and some as high as 100 pounds. Honey sells in our market now at 16 cents for best comb in 1 pound sections.

Yours truly,

DR. G. L. TINKER.

The American Apiculturist.

A Journal devoted to practical Beekeeping.

ENTERED AT THE POST-OFFICE, WENHAM, AS SECOND-CLASS MATTER.

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For the American Apiculturist.

WINTERING AND DIARRHŒA.

C. H. DAYTON.

HAVING received a dozen letters asking questions concerning my method of out-door wintering, as given in the October number of the "Am. Api," I will again try to make myself understood; and as this method is applied just before the setting in of winter, perhaps it would not be out of season in the November number. Some of the questions are like these: Is the method cheap and safe? Do the leaves not become wet and mouldy and then freeze solidly clear through? How large is the aperture in the earth above the hive? How thick should the leaves be? How early do I remove the dirt and leaves in the spring? Does it render the bee yard uneven and untidy?

As I have said before, all there is of this method of wintering is to first cover the hives with leaves and then with earth. Provide them with a tube of some kind leading from the entrance to the outside air, then leave the aperture at the top and the job is done. It does not require one cent of money. I know of no method as safe, and I am sure nothing could be cheaper. Some ask where I get so many leaves? The place where every apiary should be located is on the south and east side of heavy timber; this alone I believe will often bring success in the place of failure.

If we are to continue in apiculture, the aim should be the highest success, and that cannot be attained without taking every possible advantage, and a heavily timbered wind break I consider second to no other. The reader will imagine where I get the leaves.

That the leaves may not get wet, etc., I choose a dry time, just at the approach of cold weather, for doing this work; at a time when the leaves and earth both are dry. As the aperture, at the top, exposing the leaves, is about eight inches in diameter, it will be well protected by inverting a hive cap over it. Earth thrown up in the shape of a mound always sheds water.

Other suggestions might be given as setting the hive on a rim of wood to raise the combs up from the bottom-board to prevent the clogging of the combs with dead bees. Division boards at the sides of the combs may be used; and a small board or sticks, leaned against the front and back sides of the hive opposite the cluster before the leaves are placed around, would make the certainty a little more absolute.

This method comprises all the good points there are in both cellar and out-door wintering, and something fit to cling to not possessed by either. The packing should remain until settled warm weather.

Prepared for winter in this way, I have known colonies to remain in an unbroken cluster from Nov. 11 to May 2, and then show the best of health. I have experimented by covering the leaves entirely with earth, so as to make it air tight and

it killed the bees for me in nearly every instance. When I provide ventilation I always have healthy colonies.

This difference in the conditions of the brood-chambers was that one came out dry and clean, while the other was damp and mouldy. In one case the bees had the diarrhœa and died, while the other remained an example of industry and neatness. Both had honey and pollen.

In the consideration of the above conditions, the promulgators of the "pollen theory" insist that when the bees have diarrhœa it is because they consume pollen, and when they do not have diarrhœa they do not consume pollen. That is their whole argument in a "nut shell." We find by experiment, that while pollen accompanies all of the colonies, only those that have proper ventilation remain healthy.

Our authority says the bees consume pollen (nitrogen) to maintain temperature, temperature that is being taken away by the ventilation. Yet the fact stares us in the face that ventilation (which means a dry brood-chamber) is life, and no ventilation is death to the bees.

This shows that ventilation and the pollen theory cannot live together, nor the bees live upon natural stores without ventilation, so I have concluded to save the bees and let the pollen theory do the dying.

I think it is quite admissible that a colony without pollen and having sugar syrup for stores is more apt to winter well, and the reason for it comes about in this wise:

Every thorough apiarist knows that the warm air, that is continually escaping from a cluster of bees, sooner or later meets air of a lower temperature and immediately condenses to vapor which rests upon the hive or combs below, at the side, or directly above the cluster of bees. If the condensation takes place above the cluster, it will soon run down among the bees, or, if it is at the side, it may be close enough for their displeasure.

Now, where the colonies have natural stores, their expectation is to maintain a clean and dry brood-nest in order that it may be a fit place for the rearing of brood; and when this water comes into close proximity to it they remove it by taking it into their stomachs, where it is retained with the expectations of a flight. As time wears away and the chance for a flight does not occur, the water with what else the stomach may contain passes on as a watery, souring, and half-digested mess into the intestines. When they have no pollen and exclusive sugar stores, they have no cares, and if they were deluged with water none of it would be sipped from the combs.

This is the extent to which pollen is the cause of diarrhœa. It is claimed that the excreta of the diarrhœtic bees is replete with pollen and solid matter, and that the disease is due to the *accumulation* of fæcal matter.

A thorough understanding of the disease verifies that it is due to the *nature* of the accumulations, as the bees that soil their hives the most contain the least solid matter and are seldom the most distended. Bees that consume food containing much refuse substance may accumulate much fæcal matter in a comparatively dry state of a solid nature, and the disorder bear the description of constipation. But bees of this kind with abdomens ever so distended do not evacuate until they fly in the open air. If the distention is more than they are able to bear they die outright. When the bees are badly afflicted with diarrhœa they do not even wait until there is an accumulation, but begin early to befoul the hive and combs. I believe the repletion of the excreta with pollen and other matter was not held up as a constituent for the defence of the

"pollen theory" until "force of arms" compelled its acceptance and occupancy.

Bradford, Iowa.

For the American Apiculturist.

HOW I HAVE BEEN THE MOST SUCCESSFUL IN WINTERING BEES.

G. H. MARTIN.

My bees are wintered, about half of them, out doors upon the summer stands, and the other half in a cellar built especially for the purpose.

I commence preparations for wintering in June. When extracting, I usually leave two or three frames of sealed clover or basswood honey in the upper story until needed in the fall. If I was sure of a yield of honey in August, this precaution would perhaps be unnecessary, but my locality yields but little dark honey, and even when I get a yield I prefer to use the early gathered honey for wintering, for I never get a poor quality of honey in June and July, but it does come in August and September.

Our bees wintered upon the summer stands are packed with chaff permanently around the brood-nest. In October, I take off all surplus arrangements and substitute a case that will hold a bushel of chaff over the cluster. The brood chamber contains nine frames. In September I reduce these to eight, weeding out empty combs and combs filled with pollen; and the three frames of early honey, previously mentioned, are placed below; an arrangement similar to the Hill device is placed over the frames, then burlap and chaff or forest leaves, and over all a good layer of sawdust. The entrance is contracted; and, as many times an ordinary entrance gets clogged with dead bees or ice, I provide a safety entrance about two-thirds of the way up the front of the hive, by boring a five-eighth inch hole. I think this hole a great institution. I have wintered with and without it, and found where this entrance was used, the bees invariably came out better than those not provided. Of one hundred and twelve colonies wintered in that way last winter, one hundred and eight came to flowers in good order.

The only difference I shall make during the coming winter is to use for packing upon a portion of the hives, waste from a woolen factory.

The cellar in which I winter is built partly underground and is a part of our bee and honey house; the room is 12 × 18, and I winter over one hundred swarms in it. It is thoroughly ventilated, and has a sub-earth ventilator of seventy feet in length and four feet deep. Owing, perhaps, to insufficient draft out of the cellar, the sub-earth ventilation has not amounted to much. To have effect, I think, it must be deep and long, and then a good draft upwards to make it work. I have come to the conclusion that it is cheaper to keep a coal fire in an ante-room during the most severe weather. The temperature must not get below 45°, it is better to run it up than to let it get low. I would say that 40° is a danger point in cellar wintering. I prepare my bees for the cellar in the same way I do for wintering out doors, with the exception of leaving off the Hill device. The hives are placed upon shelves. I am not particular about removing pollen, but prefer not to have a great amount. I disturb the bees as little as possible after the honey flow and get them ready for winter as early as possible.

After setting in the cellar, I throw over them old carpets, etc. The cellar is dry, and I have good success when food and temperature are made

the main point in the preparation and practice. I also want plenty of bees; though I have wintered three frame nuclei, it does not pay to nurse them. I attribute my success in wintering to good food; plenty of bees, which signifies a good queen; a good hive, and an even temperature.

Feeding to breed young bees in the fall is not necessary. I have had swarms winter well that did not raise a young bee after August 1st. I look with disfavor upon sugar feeding. I shall stick to natural stores until I cannot winter bees upon it; then, and not till then, I shall try sugar.

Hartford, N. Y., Sept. 23, 1886.

For the American Apiculturist.

THE PRODUCTION OF FANCY COMB HONEY.

W. M. WOODWARD.

In all my work in the apiary, it is my aim to produce a first-class article, at the least cost of time, labor and money. All my fixtures are made with the above in view, and of course hives and everything so constructed as to be interchangeable as far as consistent with the use they are to be put to in general. As to surplus arrangement for comb honey, after many trials I have found no surplus case in all respects equal to Heddon's (as used on his L. hives) but with the divisions flush with the sections, leaving a $\frac{1}{4}$-inch bee-space on the top. I believe this case is by far the strongest and most durable case in use, and is the cheapest in the end.

Nothing need be said of sections, except the thinner, stronger and nicer, the better. As to foundation, I make my own, and dip but once as light as possible for surplus honey, and run the mill pretty close, so that usually the bees add some wax to the septum. I aim not so much to furnish wax as to furnish a "foundation" for their comb.

I have experimented much to find a method of operation involving the least amount of time and labor on my part and also for the bees, consistent with the largest and best results. As a result, I have found that full sheets of foundations, in both frames and sections, have doubled my crop of honey from year to year. In the brood-chamber I use full sheets on wired frames, and with a narrow bottom-bar attached at one side of the centre and wired through a corner diagonally to the bar, and foundation attached at the bottom to the side of the bar. This gives the best result. You see I want to do my work *at once for all* and know that all is always right without continual watching.

So, when I put a case on a hive for comb honey, I want to know that the bees are going to do their work right, if they work at all. For this purpose I use a full sheet of foundation cut as large, horizontally, as will fit in, and the other way, two rows of cells longer than the inside of the section and *attached at both top and bottom*. This is the only plan by which I have been able to "attain unto perfection" even when using separators as I should always do. I have tried "reversing," but usually I find some sections past and others not yet up to the point of advancement at which it is safe and profitable to reverse. Another objection is that at best the bees seldom fill the section out perfectly at the corners, and unsightly holes are left as bee passage ways. In fact, the cheapest, best and only perfect way to reverse sections is to reverse them on the foundation fastener and place them between separators and give the bees "their own sweet will."

To do a good job, the foundation must be set in a very warm room and warmed to that point in which it loses all sense of hardness to the touch, but has not yet become tender. It can be best and most comfortably done in the bright sunshine, and with a little experience is evenly and quickly done with a Parker fastener made to just fit the inside of the section, so as to fasten a whole end at one stroke. This must be done, as any after-tinkering with it will spoil the work, even if done with the greatest care. This method has, the past season, with me, produced ninety per cent of my honey, well-filled down and well-filled out at the corners of the sections, so that where separators were used it would be hard to tell by the comb which was top or bottom.

Custer, Ill., Oct. 9, 1886.

MY REPORT.

The honey crop here has been a prolonged and tedious one, and the honey seemingly gathered with a great amount of labor to both bees and keeper. All in all, I have obtained a very fair crop for this locality, the best I have ever heard of here: 190 pounds of comb honey in 1-lb. sections, 1,400 pounds of comb and about 300 pounds of extracted, from partially filled sections, etc. Have increased my bees from 17 to 54, and all are in fair to good condition for winter.

Custer, Ill.

For the American Apiculturist.

SHIPPING BEES A LONG DISTANCE.

E. R. HARDY.

The information which you desire relative to the result of the shipment of my bees, I will endeavor to give in as few words as possible, as I much prefer the work of the apiary to that of a contributor. That your readers may know the facts of the case I will say on the start that they were shipped from New Smyrna, Fla., to Jacksonville, *via* schooner; thence to Charleston by steamer and there transferred to New York by steamer; arriving in New York, they were transferred again on board a Lake Champlain canal boat to Lansingburgh, N. Y., the whole distance being some 1,275 miles and occupying thirteen and one-half days *en route*. Of the 49 colonies shipped, 48 arrived in safety with their queens and an average of 65 per cent of the bees shipped; the losses being as follows: out of 22, lost 50 per cent; of 8, lost 40 per cent; and of 18, lost 25 per cent. My greatest losses were with the strongest colonies, having no room allowed them to exercise; while others equally strong, with room to fly, lost comparatively few bees.

My smallest losses were among the black bees and those which showed but little trace of Italian blood; other conditions were the same. It will be noted that in my averages I do not consider the one whose bees are all gone; the reason for this is that they starved and therefore have no bearing on the matter of shipment. At the time of shipment (May 15) they were of course considerably stronger than ours here, and even after arrival were stronger in numbers than any in this section; but as there was not a vestige of brood in any hive they were behind at the end of twenty-one days.

My method of preparation was this: to first see that they had the necessary amount of honey stores; then to place in each hive a comb filled with water, after which the cover was removed and the whole top of the hive covered with wire cloth; over this cloth was nailed strips of ⅞-board, and the cover inverted and nailed to these strips to

prevent injury to the cloth; then to simply cover the entrances with the cloth. These as I then thought were all that were needed, viz., honey, water and plenty of air; but you note that my experience in this proved another equally important preparation,—room for exercise,—and this was given in the cases that proved this fact by their having room between the frames and the wire covering to fly at will.

It has been often asked me if I thought it advisable to ship bees from southern Florida to the north early in the spring, in order that one may get an early start here, and while I think we might profit by adopting a method of strengthening our winter stock with young bees, if it be done at the proper time and under the best condition, yet as they begin their brood-rearing very actively in February and keep the same up until the time when, if shipped here it would be necessary to have them sent, it is evident that it is only the most prolific queen that can keep up this necessary work through the season that we should require them to be doing their best.

I think, however, that queen-rearers might through the proper means be able to furnish queens considerably earlier than they are doing at a very little expense, but of this I must ask your readers to either try it themselves or wait upon the result of my own experiments in this direction.

Lansingburgh, N. Y.

For the American Apiculturist.

ADULTERATED HONEY.

C. M. GOODSPEED.

PROF. WILEY'S REPORT CRITICISED.

In the report of the Commission of Agriculture for the year 1885, in the chemists' report (pages 110 and 111), will be found a classified analysis of forty-three samples of honey from different parts of the union. Out of the forty-three samples, twenty-eight are classed as adulterations, viz.: seven samples "adulterated with starch sirup;" four "apparently adulterated with sucrose,' and seventeen samples "apparently adulterated with inverted sucrose." This is what our government chemist, H. W. Wiley, says, in his report to the Committee of Agriculture, which report has been printed and scattered among the most influential classes, to the enormous extent of 310,000 copies. Can you wonder that people suspect adulteration, especially when it can so easily be accomplished as in extracted honey. But nine of these twenty-eight adulterated samples are denominated comb honey in the report. Friends, this is a bad showing; if it be true, it cannot do otherwise than hurt our industry. Coming from the source it does, it will be held by many as being true beyond a shadow of a doubt. But to my mind there are chances for mistakes. May not different flora produce honey with its constituent parts varying largely? In other words let me ask, Will an analysis always tell when honey is adulterated? It doesn't seem possible that twenty-eight out of forty-three of our bee-keepers would adulterate their honey and I don't believe they do either. There must be a mistake somewhere.

I think if friend Wiley's attention were called to the matter, he could give us some light on the subject. In a note apart from the tables, he allows us to think he has a doubt about the adulteration of some samples he has classed in the tables as "apparently adulterated," etc. Now if those twenty-eight samples were adulterated (beyond a doubt), it is time for beekeepers to take the matter in hand in dead earnest. Or even the seven samples which he says without "ifs or ands," were "adulter-

ated with starch sirup" demands our attention and investigation.

Nearly one-sixth of all the samples declared adulterated by the Government Chemist, and of all the remaining samples not classed positively as adulteration, $\frac{3}{16}$ are classed as "apparently adulterated."

This ought to be followed up and every person adulterating honey (or anything else) smartly dealt with.

Thorn Hill, N. Y., Sept. 6, 1886.

NOTES FROM THE BAY STATE APIARY.

SMOKERS.

THE QUINBY BELLOWS SMOKER has been for years the most popular smoker used and offered for sale, yet although it has given general satisfaction, it was not perfect. Lately, one has been in use (though not as originally made), at the Bay State apiary. We saw and pointed out certain defects to the manufacturer, and also wherein this smoker could be made the best one in the market. The improvements suggested have been adopted and now this smoker is as near perfect as it is possible to make one. Not only does the improved smoker work better than the old style, but it is much less work to manufacture it, and the price to beekeepers will be considerably less.

When we used the old style of smoker, it was necessary in order to start a smoke to go into the house for a coal of fire. This was sometimes very inconvenient. All that is now needed with the improved smoker is to light a match and apply the blaze to a small hole at the base of the barrel and pump away at the bellows, and in less than a quarter of a minute smoke enough will be made to break up a town meeting.

I have used other smokers made somewhat similar to the one in question, but they all have more or less serious defects. One bad fault is the filling up of the air tube which connects the bellows and the barrel, and again, the valve which admits the air to the bellows soon becomes gummy from smoke which works back and condenses on the edges of the valve, thus preventing it from shutting sufficiently tight to prevent the air from escaping.

FUEL FOR SMOKER; HOW TO PREPARE IT.

Whatever is used for fuel in smokers should be very dry; in fact, it cannot be too dry in order to work quickly and make a good flow of smoke.

We cut up rotten elm-wood spunk in small pieces, and fill a large baking pan, and place it in the stove oven to dry. Rotten-wood thus prepared will cause less trouble and vexation than any other material we have tested. Try it.

GOLDEN-RODS.

August 25, our bees commenced to gather honey from the golden-rods, of which there were nearly fifty acres near our apiaries. We had just sent an order to a beekeeper in New York State for a lot of extracted honey, but before its arrival the bees had filled their hives, and now we have a barrel of fine white clover honey as was ever made in the state of New York.

We found a few colonies that did not seem to have sufficient stores for winter, so some of the honey was melted and heated sufficiently to destroy any germs of foul brood that might exist and then given to the bees. This precaution is one that all should take before feeding extracted honey, unless it is positively known that it came from a locality where no foul brood has ever existed. We wrote the party who shipped us this honey to know if there was any foul brood in his section. He answered there was not, and that I need not scald it. But to be on the safe side

every particle of this honey will be scalded.

ITALIAN BEES; DIFFERENCE IN THEIR WORKING QUALITIES.

While the bees were working smartly on the golden-rods and other wild flowers, we took a notion to watch them and make a note on the hives of those that appeared to be doing best. The colonies that worked the smartest were the *pure* golden Italians. Such of these colonies as contained queens that had purely marked bees, both drones and workers, were the ones selected for queen or drone mothers the coming year. Some Italian colonies that seemed rather weak in numbers were the ones that filled their hives first. Those were marked extra workers. There is as much difference in the working qualities of pure Italians as there is between black bees and Italians. Pure bred Italians of the best working strains will be a specialty at the OLD BAY STATE APIARY in the future. We want no more Syrians, Cyprians, Carniolans nor hybrids of any kind in our apiary.

SOME PECULIARITIES IN BEES.

One who takes an interest in his apiary will notice some of the peculiarities of the different colonies. On some of our hives there are wire-cloth honey-boards, or screens, which have been on nearly all the season. While some colonies stopped up every mesh in the wire-cloth with propolis, there are other colonies equally as large that merely worked around the edges where the wire is nailed to the wood. Then I noticed that the colonies that did not fill the wire-cloth with propolis were the ones that gathered the most honey. A good deal of work must be done by the bees in stopping solid a square foot of wire-cloth with propolis. While bees are spending their time doing such work they cannot gather honey.

OTHER PECULIARITIES WE NOTICE.

Some colonies, especially the black ones, were determined to stop up the spaces between the top-bars of the frames and between the honey-board and top-bars, while other colonies, even where the top-bars were one-eighth of an inch narrower, would do nothing of the kind. From some hives the honey-boards may be removed and not a bee will fly or attempt to sting, and in other cases if it is removed with great care a hundred bees will be in your face in an instant. We have one or two fine Italian colonies from which the combs can be removed without smoke and the bees will not sting. Right here, let me say that, as a general rule, we do not consider such colonies very valuable; as they are usually great swarmers and the queens very prolific, yet will store no section honey. This has always been our experience with bees that possess a gentle disposition.

RE-QUEENING.

During the last days of September a large number of our colonies were re-queened with some of the best young queens we had reared the past season. We are merely getting ready to do an immense business in the sale of queens in 1887.

There has been reared at the Bay State apiary about 1500 queens the past season. But four (4) queens out of all that have been shipped were reported impure. Less than twenty-five queens died in the mails.

Some of those who received dead queens gave their opinion and suggested reasons why they died. Probably some of our friends do not know that we have been shipping queens, by mail, for twenty-five years and would be likely to know as much about it as any one who receives two or three queens a year. Yet suggestions and good advice are always welcome and kindly received by us.

When two queens are put up the

same day, in the same kind of cages, and have the same food, in fact, every way alike and both shipped to one address and the cages bound together, sometimes one will reach its destination in perfect condition while the other queen and every accompanying bee will be dead.

This has been known to happen in a few instances the past season. Who can tell what caused their death? We must confess our inability to solve the mystery.

PREPARING BEES FOR WINTER.

Most of our bees are all "fixed up" for winter. We have fifty colonies in eight L. frame hives; having sides one-half an inch thick. These hives, or rather brood-chambers, are placed inside of an outer-case. The first thing done was to nail strips three-fourths of an inch thick to the bottom board, thus bringing the bottom of the frames an inch and a quarter above the bottom-board and leaving plenty of room under the combs for a free circulation of air, and for dead bees and the dirt that usually collects in winter. The outer cases of our hives are in three sections. The bottom one is ten inches deep, the middle one six inches, and the top one or the cap, is also six inches deep. The two bottom sections are placed over the brood-chamber, the cushion or mat placed on, and then the sawdust or other packing applied until it is at least four inches deep over the top of the frames. Ventilating holes one inch in diameter were made in the caps under the roof-boards and over the packing.

This method is similar to those given in the October number by Messrs. Pond, Russell, and Bingham for WINTERING BEES.

We would not pay any one twenty-five cents per hive to guarantee our bees to come out all right in the spring. All of our colonies have a good quality of food, plenty of young bees, and are well packed, so we have no fear about their wintering.

Bees packed as above described will not only winter well but will *spring* well also, as when properly prepared for winter they are also prepared for spring. We regard the packing more important for spring than for winter. More bees die after the twentieth of March than from December to March; such has been our experience, at least.

Mr. Doolittle's suggestion to winter a part of the bees in the cellar and a part on the summer stands is good advice. About forty of our colonies will be placed in the cellar, the temperature of which will be kept at nearly 45° until about February 20, when we shall try to raise it and keep it up to 55°.

We shall watch the reports of "Old Prob.," and when he says "a cold wave is coming down from Alaska," say about Nov. 20 or 25, then the bees will be placed in the cellar post-haste. By the way, "Old Prob." is not always reliable in his predictions. Two years ago about the 23rd of November, he predicted that a big snow storm was raging in the far west moving east and was being followed by a cold wave and zero weather. We were somewhat frightened and placed all of our bees in a bee-house prepared for them, but the cold wave did not come, and from that time, November 25 to January 15, the weather was so warm that the bees took a flight nearly every day and we felt like thrashing old Prob. for making a false report.

Then winter set in and the bees did not fly again until March 29. Those in the bee-house wintered splendidly, although the thermometer registered 60° nearly all of the time the first six weeks they were in.

TEASEL is the best cultivated plant for producing honey. It yields a honey that is quite liquid, very sweet and almost white.

QUESTIONS AND ANSWERS.

QUESTIONS BY SAMUEL CUSHMAN.

INTRODUCING QUEENS.

After removing queen from strong colony, do you immediately put in the caged queen and attendants with cage arranged so bees can release her by eating away the candy, or do you leave her in the hive two days, before allowing them to release her?

Do you in either case allow attendant bees to remain with queen or remove them before placing cage in hive?

I have failed lately by the following methods.

1st. I removed queen from hybrid stock, immediately put in a queen *caged alone* with candy stopper. Queen was released and was killed.

2nd. Full stock had queen removed. A queen caged *alone* was given them, left two days, then bees were allowed to release her. This colony was fed while queen was caged. Several days later found her on combs crawling about rather forlornly, with no eggs in cells and several queen cells some of them capped.

Another queen, managed the same, was found dead in cage when hive was opened to allow bees to release her.

At the same time I was successful by giving sealed brood and young bees to a valuable queen.

Also by giving queen and *attendants* to a gentle but weak colony, who had their queen removed and had started queen cells. They were allowed to release her as soon as they could remove the candy.

The above attempts were made during a scarcity of honey flow.

What was the trouble?

ANSWERS BY G. M. DOOLITTLE.

All who have read Mr. Alley's plan of introducing virgin queens, know that he recommends waiting seventy-two hours after the stock or nucleus has a queen removed from it, before introducing the virgin, and I wish to say that the same thing which applies to a virgin queen holds good with a laying queen with this difference; a laying queen will often be accepted where a virgin will not, so that when there is a prospect of success with a virgin queen, there is almost an absolute certainty when the same plan is used with a laying queen.

To avoid labor I made up a lot of cages fixed in such a way that when they were once filled with candy it took the bees from three to four days to eat through it to the queen; in this way I had the Alley plan so modified that I need not open a hive but once, for the new queen could be put in the hive at the same time the other was taken out, and be getting acquainted with the bees all those three or four days that they were liberating her. Another thing: I find that often when a queen is balled or killed there are at first not more than one or two bees hostile to her while the rest of the colony would treat her kindly, did not these few bees "raise a row" by hanging to the queen and trying to sting her, thus causing the scent of poison in the hive which arouses the whole colony. We often see a few bees tightly fastened to the cage containing a queen when all the rest about it are quiet and well disposed. Well, this plan of mine lets the queen out at quite a distance from these few hostile bees and the cage should then be such, so that there is no danger from them and as the bees first entering the cage, and out through which she must pass are well filled with the candy they have no inclination to molest her so she passes out quietly and is safely introduced. I commenced using this plan in June, 1885, using it very largely ever since, not losing a single laying queen and very few virgins. I do not in any case allow any attendant bees with the queen, for on all occasions where I have tried I find that as a rule these attendant bees are killed, and from the killing of them a hostility is started toward the queen. In all of this work I find that the "Good" candy at first described by him is preferable. To work it, get some honey in a dish and stir into it all the granulated sugar necessary to keep the

honey from running when it is ready for use. Pack it in solid in the hole leading to the wire-cloth cage so that the bees must remove it slowly. I find that about six inches in length is about the right distance, so as to take them three days for removal, while the sized hole I used is five-eighths of an inch in diameter. In all the methods Mr. Cushman says he has used, he does not tell whether the queens to be introduced come from a distant apiary or were from his own. I find a queen coming from a distance harder to introduce than one taken from a nucleus in my own yard. I also find, as does Mr. C., that a small colony will accept a queen more readily than a large colony. The queen spoken of in case second might have been sound in my opinion if the queen cells had been destroyed every other day till there was no larva from which they could build cells. The queen which was found dead in the cage might have starved, as they frequently do when alone in a cage having only candy in it made of powdered sugar and honey. Just what the trouble was in all these cases I could not tell, from the small amount of information given. Losses of queens frequently occur which are hard to be accounted for especially when full stocks of hybrid bees are the ones to which we have to give queens. There is only one absolutely safe way that I know of to introduce a queen and that is by the plan of caging bees, I have given in the bee papers. All the bees from a colony are shaken into a wire cloth box minus the queen, and kept in a shady place with a cloth thrown over them for four hours at which time they are ready to accept of anything in the line of a queen, which is now given to them through a hole in the box, after which they are left until all are quietly clustered, when they are put in a hive on a new stand and given one frame of hatching brood from their old hive, the rest of the hive being filled with empty combs. In a few days after the queen gets to laying, give a part or all of their brood and honey back to them, still keeping them on the new stand. This is some trouble I know, but is much better than to run any risk on a valuable queen coming to you unexpectedly from abroad.

ANSWERS BY JAMES HEDDON.

I never introduce any of the attendant bees with the queen. My plan is to firmly stop up the cage, and leave it with the bees twenty-four to forty-eight hours, according to the honey-flow, and then examine, and if peace and good nature seem to prevail about the cage, I either dip the queen in honey, and drop her into the hive, or I place some comb-capping over the mouth of the cage, and let the bees release her a few hours later. This is when the caging plan is used.

I have successfully introduced many queens in the way you mention under heads 1st and 2nd. I am aware these are not infallible rules, however.

I think your "scarcity of honey flow" accounts, in part at least, for your failures. The most common cause of loss in introducing, is the practice of opening the colony a day or so after introducing the queen when although you find her well received and laying, the disturbance of opening the hive causes the bees to re-suspect the queen and attack and kill her after you close the hive. I have treated this subject in my book much more to my own satisfaction, than space in this department will admit of.

ANSWERS BY G. W. DEMAREE.

At the time the queen is removed, the cage with the stranger queen and attendant bees is placed on the tops

of the frames with some strips of wood or bits of wax under its ends, so as to give the bees free access to the wire cloth between it and the tops of the frames. The whole is now covered with a bee quilt. The food apartment is left closed. Once or twice a day the quilt is gently lifted at one end to see how the bees disport themselves about the cage. As long as the bees "ball" the cage, or gather in knots or clusters about it, I leave them to themselves to work off their discontent. As soon as I find the cage nearly deserted of congregated bees, which may be in one, two or three days, the stopper to the food department of the cage is removed, and the bees allowed to release the queen at their leisure.

I have tried both ways thoroughly and I now prefer to have the attendant bees in the cage with the queen.

In the first experiment given by Mr. Cushman, the queen was released before the bees were reconciled to her. I have tried this plan too often to mistake I think.

The second experiment is a case in which there is room for doubt. I have had this state of things under my observation several times, and I concluded that either the queen was sick and the bees had no faith in her, or the colony was not in unison of purpose. Most probably she was released too soon.

I have had two or three cases where the queens were found dead in the cage. Of course, in such cases, the queen either sickens and dies or is stung through the wire cloth.

I remember years ago of trying to introduce a queen in the unnatural way recommended and widely published by one of the older bee papers, to wit: Cage the queen forty-eight hours, then release her in broad daylight, keeping a watch over her to see how the bees received her. On the occasion referred to, I caused the queen to run out of the cage on top of the frames among an excited lot of bees, and of course she was "balled," as might naturally be expected. I smoked the bees off of her and lifted her by the wings with the intention of recaging her, when a vengeful worker made a fierce dash at her and stung her fatally before I could move a muscle. After years of careful experimenting in this direction, I am more and more convinced that no systematized plan will meet all the conditions when introducing queens. Close observation and good judgment on the part of the apiarist are the nearest approximation to *certainty* in results, that I know anything about.

To introduce queens when there is a steady flow of honey, is a very different thing from introducing them at a time of dearth when the bees are ill tempered and discontented. This fact alone is sufficient to throw discredit on all "infallible plans."

In introducing queens, I am governed by the following rules, and they may be the means of helping some who have not had the opportunity to go over the whole grounds of experiment.

1. The cage used for introducing should be so arranged that the bees can release the queen by eating out the provision stored in the cage.

2. The cage should be placed in such a position that the apiarist can see the behavior of the bees about the cage without stirring up, or exciting the bees, hence the top of the frames I think is the best place.

3. The bees should not be permitted to release the queen till they give evidence that they are reconciled to her.

4. The colony should be left quietly to themselves till the queen begins to feel at home, and begins to lay eggs, after which she is as safe as if she had been reared in the hive.

ANSWERS BY OLD BEEKEEPER.

1. Our plan for introducing

queens is to leave the colony queenless three days and no queen is placed in or near the hive till the expiration of seventy-two hours, and then a few puffs of tobacco smoke are blown in among the combs and the queen allowed to enter at once.

If queens are introduced by the cage method, that is by allowing the bees to release the queen by eating out the sugar, she should not be placed in the hive until the colony has been queenless three days; otherwise she would be destroyed.

2. It would make no difference as to the success of the operation if one hundred attendants were in the cage at the time the queen is introduced.

The loss of the queen by the first method was owing to placing the caged queen in the hive at the time the colony was made queenless. Had you examined the cage at any time before the bees released the queen, you would have found the bees trying to ball her by hugging the wire netting with which the cage is covered. It is never safe to release a queen under such circumstances, as sure death will be the result.

The queen which was caged alone and released by the bees was stung as soon as she emerged from the cage. The bees realizing the situation had commenced to make preparation to rear another queen. This case is exactly similar to No. 1, only there were no attendant bees with the queen.

By the three-day method for introducing queens, it would make no difference whether the bees were gathering honey or not, it is sure to succeed every time, nothing is lost by allowing a colony to remain queenless three or more days during the breeding season, as when a young and vigorous queen is introduced she will soon fill all the combs with brood.

Another point in introducing queens by the seventy-two hour method is this: If the new queens are introduced as directed, it is not necessary to open the hive to destroy the queen-cells that may have been commenced, as the bees will cease work upon them as soon as they realize that they have a queen.

If, for any reason, the colony is allowed to remain queenless four or more days, the combs should be examined and all the queen-cells destroyed, as the fertile queen will not, in all cases, be allowed to meddle with them, and some of the cells would mature and the first queen that emerges would soon dispatch the laying queen, though she has had possession of the combs for twelve days.

Another season the Simmons' method for immediate introduction will be thoroughly tested in the Bay State Apiary and the result given to the readers of the "Api."

QUESTION BY H. E. HARRINGTON.

What is the cause of queens being lost after they have been introduced and laying seven or eight days? Will robbing in a mild form do it?

ANSWER BY G. M. DOOLITTLE.

I never had any such loss as Mr. Harrington speaks of when the queen was one taken from my own yard, but I have frequently had such when the queen came from a distance. There is something about the caging and shipping of a prolific queen that injures the majority of such, when so shipped. What it is I do not know, but of one thing I am certain: I have sent from my yard some of the best queens I ever owned, which I knew were all right in every respect and had them reported as dead, in from ten days to a month, or else that they laid very sparingly and were of no value. I also know that I have received queens from other parties (who I believe would sooner lose a right arm than misrepresent), which proved in my yard the same as others

(or as above) of mine, so that the first thing I generally do, after receiving a queen, is to raise some queens from her brood, so that if she dies I shall have some of the stock. I find queens so reared prove as good as those reared from the same queen before shipment.

ANSWER BY G. W. DEMAREE.

The question by Mr. H. E. Hartington is one that I would like to know more about myself. Happily it is not of frequent occurrence, but it is very annoying when it does occur.

Doubtless queens meet with accidents, are subject to sickness, etc., like other animals; while any form of abnormality, such as an over proportion of indifferent old bees, laying workers, etc., may endanger the life of the queen. Robbing is always dangerous to the safety of a queen. Beekeepers can never hope to be free from the usual casualties which beset all alike.

ANSWER BY JAMES HEDDON.

While a mild form of robbing might have a tendency to irritate the bees to the destruction of the new queen, still I am of the opinion that the most common cause of these losses is opening the hive "to see how she is coming on" as mentioned above.

ANSWER BY H. ALLEY.

There are several reasons why queens die soon after being introduced. A person who has introduced a fine queen is pretty apt to open the hive often to see how nicely his queen looks and to satisfy himself that he has been successful in introducing. In opening a hive often there is danger of killing a queen in removing and replacing the combs, then again bees will sometimes kill their own queen should a few robber bees gain an entrance to the hive. The best and safest time to open a hive after the honey harvest is over is just before sunset. If the bees are disposed to rob they are soon checked by darkness.

Queens that are shipped by mail are sometimes injured, so that they die soon after being introduced. It is strange that all queens sent by mail are not killed long before they reach their destination, and no one would wonder at it could they once see those fellows pitch the mail bags from the cars while the train is going at the rate of sixty miles an hour.

WHEN TO PLACE BEES IN THE CELLAR OR BEE HOUSE.

QUESTIONS BY THE EDITOR.

What time do you put bees in the cellar or bee house for winter? Would you disturb them to do so, if the temperature is below freezing point?

ANSWER BY DR. TINKER.

If the temperature of the cellar or bee house is right, bees may be carried in any time after the twentieth of November in this locality. I have taken them in as late as the seventh of December with good results after they had experienced some very cold nights. There was, however, no frost in the hives.

It is perfectly safe to carry bees in at a freezing temperature. I have carried mine in at all times, according to the state of the weather. If cold winds set in have taken them in at once, and if severe cold was threatened have taken them in after night. I shall again this year leave them out until the approach of threatening weather, being more concerned about cold winds than a few nights of severe cold when the air is still.

Nearly all colonies are aware of being handled, no matter how carefully they are moved; but no harm results from awakening them if no

direct jar is given to the hive. The disturbance is manifested, usually, by an increased murmur from the hive, and with some colonies bees will appear at the entrance.

ANSWER BY JAMES HEDDON.

When I think there is no more chance for thorough flight I put them in in any temperature we happen to have that is too cool to fly, and take them out when they can have a safe fly at once.

ANSWER BY PROF. COOK.

We never put our bees in cellar till November. Usually about the 15th or 20th. I like to have them in before it becomes *very cold*. One year I put them in November 3rd and it was none too early. Usually November 20 is early enough.

ANSWER BY R. R. M. STEVENSON.

I winter on summer stands. The temperature seldom goes lower than about 25° or 28°. The coldest weather ever experienced hereabouts since 1857 was last winter, which was 17° or thereabouts above zero. I never disturb them unless they are flying, and they are seldom confined more than ten or twenty days through the entire winter. Last winter the first drone eggs were laid March 12 or 13th. My bees are now bringing in honey from the *asters*. The temperature to-day is 80° in the shade. The honey flow ceases in about three weeks.

Pocomoke, Md., Oct. 10, 1886.

ANSWER BY C. C. MILLER.

I put my bees in cellar some time in November, sometimes by the tenth, oftener two weeks later.

I would not object to the temperature being 32° at the time of taking in, if it had not been continuously cold before. In fact I thiuk should like it as cold as that if the bees had had a fly the day before.

ANSWER BY W. M. WOODWARD.

I place my bees in the cellar as soon as I see that winter is surely coming; but not until the ground begins to freeze or a cold snap has set in. I never placed them in the cellar when it was *not* below freezing and see no sign of any harm to them on that score. I prefer the air to be pretty cold in the cellar, as it quiets them down better to work among. Put them in at night as quietly as possible and shut them up to stay. I give no top ventilation and only a very little at the side near the bottom. This is done through a stuffed pipe opening out doors. No current is ever allowed in the cellar and no bees have ever been lost in it yet. Cellar very dry. Temperature unknown.

Custer, Ill.

WIND-BREAK.

QUESTIONS BY A PRACTICAL BEEKEEPER.

1. Do you think a "wind-break" of boards, say a fence eight or ten feet high on the north side of the apiary, of any advantage as a winter protection?

2. If a heavy snow comes and covers the hives, or enough merely to block the entrances, would you remove it in either case?

3. Suppose the bees are in single-walled hives, is there not more danger of the colony smothering and the combs moulding than there would be if they were in double-wall hives?

4. How often during the winter should the hives be visited and the dead bees removed that seem to clog the entrances?

5. Should you visit your bee house or cellar in winter (say two months after the bees were put in) and find a few uneasy colonies, as indicated by the bees moving about the entrances, or by the front of the hives being daubed by their discharges, would you advise removing these colonies on the first warm day for a flight, or would the other colonies be damaged by the disturbance more than would be gained even should the few uneasy colonies be saved?

6. Do you shade the entrances to your hives in winter?

7. As you winter bees mostly on the summer stand, and allow ventilators through several inches of packing, how large an entrance do you leave

open? Are you troubled with the combs moulding by your method of wintering?

ANSWERS BY A. E. MANUM.

1. A wind-break on the north side of an apiary is very advantageous in early spring; but not as necessary in winter where bees are wintered in chaff hives.

2. Yes, if the hives are of the ordinary make or style; but with my hive the entrance never can get blocked with snow, though they are often covered for weeks with snow and I am always glad to see them so covered.

3. Yes, provided the entrance is not protected by a portico.

4. Every time there comes a thaw so that the bees may fly if they wish.

5. I would remove them by all means and give them a fly. Hives should always be so packed that any one hive can be removed without disturbing the others.

6. Yes.

7. My winter entrances are $\frac{3}{8} \times 2$ inches; in summer $1\frac{1}{4} \times 14$ inches.

I am never troubled with combs moulding; how can they mould when there is so perfect a ventilation through the hive? All moisture from the bees or honey rises and passes through the packing over the bees; in very cold weather the top of the packing is always frosty but by forcing the hand through the packing we find it dry and warm except on the very top.

BEST RACES OF BEES.

Palmetto, Florida, Aug. 7, 1886.

AMERICAN APICULTURIST:

I would like to ask a few questions to be answered through the Apiculturist.—

1. What race or strain of bees do you consider best for general purposes, (taking into consideration, gentleness in handling, honey gathering and wintering) pure Italian, or a cross between Italians and Cyprians, or between Italians and Holy Lands?

2. In using a two-story hive for extracting honey do you use a honey-board? If so should it be queen-excluding?

Respectfully,
T. G. GLOVER.

ANSWERS BY H. ALLEY.

1. All races and their crosses, and all strains of bees have been tested in the Bay State Apiaries, but none so far as our experience goes are equal to the best strains of American Italians. By American Italians I mean bees of this race that have been propagated here for nearly twenty-five years. No imported Italian queens ever reared colonies that gave as good results as home-bred queens.

Let alone all other new races and accept the Italians.

2. A honey-board is not necessary if your hives are properly constructed. If you are using frames with narrow top-bars say seven-eighths of an inch wide, a honey-board should be used between. We do not, however, consider the use of a honey-board any disadvantage. If one is used it should certainly be queen-excluding, or the queen will desert the lower story and make her home in the hive above. I have found this to be the case in nine cases out of ten.

Bees kept in two-story hives in such a hot climate as Florida should certainly be allowed to pass out direct from the upper hive, and not be compelled to go down through the brood-chamber, as so much time would be lost, and then again an entrance in the upper hive would afford free ventilation. Try it and see if the results are not satisfactory.

QUESTION BY IRA WITMORE.

1. Would you be so kind as to let me know which race of bees is the most profitable taking all things into consideration?

ANSWER BY HENRY ALLEY.

1. All the new races of bees have been thoroughly tested in the Bay State apiaries, and none were found to equal the *pure* Italians in any respect. None of the new races or their crosses combine so many desirable qualities as the best strains of Italians.

Seven years ago we imported some Carniolan queens. They were perfect so far as purity was desired, but their swarming habits were such that they were soon allowed to run out. With us any race of bees will swarm too much, though none can compete with the Hungarian or Carniolans. There is an American, some where in Germany, who is shipping queens of this latter race to this country, and many people are led to believe that they are superior to any other race. Our statements regarding the race of bees this same person has been sending here rather hurt his business, and we hope that what is said in this connection will convince any reader of the Apiculturist that the Carniolans are as worthless as some other imported bees that are being sent here.

Bear in mind that our best strains of pure Italians were not reared in Italy, but here in America. I never saw a pure Italian queen, nor yet heard any person say that they ever received one from abroad. The American Italians are superior to any bees of this strain in the world, and to the American beekeeper belongs the credit for this great improvement in the Italian. Don't purchase imported queen bees; they are not so valuable as home-bred queens, and they do not cost one-quarter as much.

THE DRONE AND QUEEN-TRAP.

QUESTIONS BY C. C. M.

1. Would it be practicable and profitable to use queen traps on one hundred hives in an out apiary which is visited only once or twice a week, no one in the meantime being present to watch for swarms?

2. Are there any large honey producers who have made a practice of using queen traps to catch queens of issuing swarms?

ANSWERS BY HENRY ALLEY.

1. Yes, we think it would. Yet all should understand that the drone-trap does not prevent swarming, but it does gives the apiarist full control of his swarms when they issue.

Suppose one has a hundred colonies of bees in one or more places. Now, is it not perfectly natural for from one to ten swarms to issue at the same time when the weather is favorable? What is to be done under the circumstances providing the apiarist is present and several colonies, more or less, swarm and settle in one immense cluster? To separate and divide into the proper size colonies and provide each swarm with a queen would be a big job, at least it it would be to me, and I think it would be to most people. Several of the queens would be lost, in any event. Now, suppose all this took place when the apiarist was not present and perhaps would not be there for two or three days, what would be the result? All who have any acquaintance with bees know about what it would be, and I need not state here.

Well, suppose the hives were all supplied with the drone and queen-traps and from two to ten swarms issued and all settled in one cluster (if they do settle; generally they do not when the trap is used); the result would be, queens all trapped and the bees returned to the hives from which they issued, when in some cases, and perhaps in a majority of cases, the bees would come off again the next day, provided the queen is released from the trap. Now, right here some one will say; "then we must be present and release the queen every time a swarm issues?" Not so,

my friend, the traps as we now make them are provided with a small outlet sufficiently large for the queen to pass out and into the hive again. All this is done by merely drawing out or pushing in a small nail at one end of the trap.

2. I cannot say how many *large* honey producers are using the traps, as the term large is quite indefinite in this connection. People who have eighty and one hundred or more colonies are using them. One beekeeper wrote me last week that he had eighty colonies and was using many of the traps, and stated that he wanted enough for each hive as he could not do without them. Large beekeepers who do not use them know little of the comforts derived from such an important labor-saving appliance for use in the apiary.

Out of the 25,000 traps in use, only one man ever found fault with them. This will not surprise any one when I state that the purchaser did not possess sufficient ingenuity to remove the packing that was attached to the trap to prevent damage in the mail. When he had been taught that part of it, he placed the trap to the entrance of the hive wrong end foremost and then wrote to us that it would not work. Well, we guess it would not.

WINTERING BEES IN AN OPEN SHED.

QUESTIONS BY A NOVICE.

Will you please answer the following questions through the APICULTURIST?

1. I want to put my bees into a shed for winter; my hives are double-walled, hold twelve frames of four pounds each which are all full of honey at present. Had I better leave all the frames in the hive over winter or not? If not, how many and what is the best to put in their places?

2. Had I better fix up the hives as I want them for winter on their summer stands, and then leave until cold weather entirely prevents their flying, before moving them into the shed? If moved before, what is there to prevent them from going back to the old stand to perish?

ANSWERS BY HENRY ALLEY.

1. If your bees are in double-wall hives, I would advise, after packing properly, leaving them on the summer stands, as they will winter just as well, and perhaps better, than they would in a shed, unless the temperature of the shed is kept up to 40° or 45°. I think it would be advisable to reduce the number of combs from twelve to eight, and use a dummy, such as has been described in some of the back numbers of the "Apiculturist."

2. Yes, by all means leave the bees upon the summer stands until steady cold weather sets in. If moved into the shed, the hives should be covered up to keep out the light, in case the weather becomes warm enough for the bees to fly, or many of the bees would leave the hive and go to the old location and perish.

EDITORIAL.

MR. G. M. DOOLITTLE said in a recent number of the "Api" that he had used about all the section cases advertised, but likes the two-inch-wide frames holding but one tier of section better than any other. As we are advertising a section case which is new and novel, we wish to say that Mr. Doolittle has never used nor yet seen one of them. They are composed of six two-inch-wide frames, four one-pound sections to a frame. The whole are then clamped together and held firmly in place, and so arranged that the bees cannot stick them up with bee-glue or wax. These cases are invertible, and may be tiered up as much as desired. During the past season we had four of them on a hive at one time, ninety-

six one-pound boxes in all — and the colony filled them. When one case was about two-thirds filled, or as soon as the outside sections were capped at the top, the section-case was reversed, and at the same time a case of new sections placed under, and next to the brood. I believe no better system for getting section honey has ever been devised. No arrangement that we have seen is so simple and convenient or costs less to manufacture. These cases were exhibited at the Bay State Fair held in Boston, the first week in October, and were said to be by many, the best arrangement they had seen.

The December number will contain a better description of these cases, illustrated by engravings, and one also of the Bay State Reversible Hive.

What is it? Several readers of the "Api" have written to this office regarding a kind of dark honey their bees have gathered during the summer. While at the apiary of Rev. D. D. Marsh of Georgetown, some twelve miles from Wenham, a sample of this honey was shown that Mr. Marsh had recently extracted; this was about the fifteenth of July. We expressed an opinion that it might be honey dew. Some twenty years ago our bees stored considerable honey of this kind, but if our memory serves us rightly, it was gathered each day before ten o'clock in the morning. This was not the case this year, as the bees worked all day on which this honey in question could be obtained; this being the case it cannot be honey dew. No doubt some one or more of our readers can throw some light upon the subject. We know of no one who can do so better than Professor Cook. If there are others who have looked into the matter we should be pleased to publish their correspondence.

One of the readers of the "Api," whose communications can be found in the LETTER BOX, has expressed his opinion that this dark honey is honey dew, and predicts that mortality among the bees will be quite heavy the coming winter.

If it *is* honey dew, we can agree with L. M. T. in all he predicts, as in our opinion about every colony that has stored in its combs a quantity of this honey will die before spring, unless the weather is most favorable for frequent flights during the winter.

The proper remedy to apply was to use the extractor and remove all such honey by Sept. 10, and then feed good honey or sugar syrup.

We purchased two new colonies of Mr. Marsh, and their combs are well filled with this dark honey. These colonies will be removed to Wenham soon, and a report as to how they winter will be made through the "Api" at the proper time.

Several customers have stated to us that, in their opinion, queens that they have received from this office were not fertilized. Here is what one kind friend says: "You seem to be considerably exercised over the fact that I thought one (dead one) of the queens you sent me was not fertile. I founded my belief on its size, taking for granted what you have repeatedly said 'that a virgin queen would easily pass through the trap.' The queen was small compared with any black queens and it readily passed through the trap I had just received from you — this I can swear to, *for I put it through with my own hands.*"

[Comment is really unnecessary. However, I will try and explain matters, so perhaps our friend will not again falsely accuse any one of sending him an unfertile queen for a fertile one.

In the first place the queen did not pass through the zinc, for how could a dead queen do so? You

say that you put her through with your own hands; and as you easily did so, you think it sufficient evidence that she was not fertile. Well, now my friend, just take one of those "large" black queens, dead or alive and see if you cannot force her through the same perforation in the metal that you did the dead queen. You also say that you commenced to keep bees only this year. When you have had more experience in bee matters, you will know that queens of any race when sent by mail are considerably smaller after being in the cages twelve hours, and a queen that has been dead one day is quite small, and dried up.

A good many customers on receipt of queens have said: "the queen came to hand all right, but is smaller than I expected." These same parties would write again after the queen had commenced to lay and say: "the queen is a beauty and very large." Now, friends, when you get a queen that seems small, please do not get in a passion and blow us up. Wait and see what the queen is, and give her a chance to develop; then if not satisfactory, no fault will be found if you express yourself in a gentlemanly and business-like manner.

If any person receives a queen from this office that he has any reason to think has not been fertilized let them forward all such to Prof. Cook, and if he says they are unfertile we will pay $25 for each queen. If they are fertile all that is asked of you is that you will say nothing more about it.

There were 285 nucleus hives in full operation in our queen apiary, and 200 nursery cages. We have sent out no unfertile queens by mistake or otherwise. I wish all our customers could visit our apiaries and select queens for themselves.]

Mr. E. R. Hardy has given on another page his experience in shipping bees a long distance. It is evident that his colonies suffered heavy losses for several reasons. The fact that he *nailed* wire cloth over the entrance is one reason why so many bees died, and was not the proper thing to do. The entrance ought not to have been covered at all, and then two or three one-inch holes should have been made several inches above the regular entrance for ventilation and for the bees to pass out in case the usual entrance became closed by dead bees. The entrance should have been covered with a screen, the same as described in the Beekeepers' Handy Book, as this would have given plenty of room for the bees to come out for air, and at the same time this arrangement furnishes abundant ventilation. Another cause of loss is the fact that more room was not given over the combs. An extra chamber, not less than four inches high, should have been placed over the combs, as this would have allowed plenty of room for the bees to have clustered as when the combs are full of sealed brood, it is very hot in the hive, and the bees must have room to flee to and cluster.

If a large number of colonies of bees are to be shipped a long distance when the combs are full of brood in all stages, some one should attend them and furnish each hive with one pint of water each day.

The proper way to prepare a hive of bees to go a long distance is this: Make a box that will be two inches deeper under the frame and four inches of space over the frames. Secure the frames at the bottom by a piece of wood having notches in it for the frames to rest on, and if any of the combs do not quite reach the bottom-bar, place strips of wood about one-half inch thick between the bottom of the comb and bottom-bar, and they will stand pretty rough handling before the combs will break. Cover the entire top of the hive with wire-cloth, and protect

the wire with pieces of wood. Just before they are delivered to express, dash a pint of cold water in among the bees and combs, and if the bees will reach destination in three days, they will be in fine condition even though the temperature is 90° in the shade.

The whole secret in shipping full colonies of bees is in giving plenty of room above and below the frames. When the weather is hot all the bees will be found above the combs, if there is room for them to cluster there.

How to winter bees.—The October number of the "Api" has been in great demand; in fact, the call for it has been such that we were obliged to print a second edition as early as Oct. 15 in order to meet the demand. This number of the Apiculturist was stereotyped and we are prepared to print as many editions as will be called for.

The Apiculturist for July and August were nearly all sent out, and we are short of those particular numbers. Will those who do not care to preserve them mail them to this office? Please write your address on wrapper and all who return them will be compensated for their trouble.

THE AMERICAN BEE JOURNAL is the best weekly bee paper published in the English language. Price $1.00 per year.

If any new subscriber to the "Apiculturist," or those who renew, desire to take a weekly Bee Journal we will send both papers for $1.70.

SELECTIONS FROM CORRESPONDENCE.

A HINT FOR MR. HEDDON.

Wonewoc, Wis.

I hope Mr. Heddon will put his bees into winter quarters with nothing but granulated sugar syrup to winter on. I believe it will go far towards solving the pollen theory.

I look for a large mortality the coming winter, caused by what is called honey-dew, there is such an abundance in a large majority of the states. In my opinion many will drop the bee business in the near future.

L. N. T.

Longley Station, Wood Co., O., Oct. 5, 1886.

FRIEND ALLEY:

With the queens I bought of you I have greatly improved my bees. I have bought queens of various men, but they fail to compete with yours.

The $3 queen I bought of you in Aug., 1886, is a prize. I would not take $25 for her if I could not buy any more of you. Every one who sees them says they are the finest bees they ever saw. She is perfect in all points.

IRA WITMORE.

Downs' Chapel, Del.

Scarcely any surplus honey in this vicinity, except from Italians. I have Italians, that have not cast more than one swarm, will yield one hundred pounds surplus comb honey.

E. B. SLAUGHTER.

Bradford, Iowa.

MR. ALLEY,

Please accept thanks for two fine queens. They came to hand as bright and lively as though they had not been out of the hive a minute, not a dead bee in the cage. One of them is the largest queen of any I ever took from the mail.

The time for the fall crop in this section is past. I think the amount of honey in the hives has decreased daily since July 15. Those who took the early honey and sold it will stand a chance to profit by experience.

C. W. DAYTON.

COLOR OF POLLEN.

Is not Mr. W. M. Woodward in error in regard to the color of white clover pollen? I always supposed it was dark, in fact, the darkest of anything north, unless it is pollen from poppy; at least it is the case here.

M. L. SPENCER.

C. H. DRUMMOND, of Winslow, Maine, says: those three queens you sent me are just beauties and have filled their hives with as handsome frames of brood as one needs to see.

Cedar Springs, Mich.

I received the queen all right, and got her introduced successfully. She is laying nicely at present. I am very much pleased with her. I introduced her in the following manner. I took one card of brood and what bees were on it and put in a hive, and put an empty comb on each side of it, then I let the queen in from the entrance and smoked them for about fifteen minutes, and the next day I put two more cards of brood in and smoked as before, The following day I took the old queen away and put in the balance of the cards. My idea for doing it this way was that, if they killed the new queen, I could put the cards back with the old queen. I do not know whether this is anything new or not. I never have heard of introducing this way nor have I seen it in print. If it is anything new you can give it to the readers of the "Api." I have since introduced the old queen successfully in the same manner.

WM. L. LAUGHLIN.

[The above is exactly our method for immediate introduction of queens, with this difference: instead of removing a part of the bees and introducing the queen, we remove the "old queen" and introduce to the whole colony at the same time. Try it, as we do, friend L, and you will be well pleased with the result. Let me give one word of caution. Do not undertake to introduce by this method except after sunset, as the smoking would put the colony in such a condition that robbing would be induced.]

Gilbertsville, Otsego Co., N. Y.

MR. ALLEY:

I enclose you one dollar to renew my subscription to the "Api," which is the best bee paper published. I dont want my subscription to run out as I consider the "Api" a necessity.

The October number is well worth $1.00 to any beekeeper who wants to winter his bees successfully. I take two other bee papers, but they take a back seat when the "Api" arrives. I am well pleased with the queens I got of you; shall want more another season. If you like, you may publish my testimonial concerning the Api, just say that it is the *Boss*.

I am using the new Heddon hives and consider them the best hive yet. I shall try some of your drone-traps another season, as I think they are all you claim for them. Wishing you success, I remain

Yours,

Frank Bushnell.

USEFUL HINTS.

THE hives in which bees are to be wintered in on summer stands should be nearly or quite two feet above the ground; when so placed the entrance will not be clogged with snow, and what is far better, the snow will not "bank up" against the sides of the hive; while this would not damage bees in a double wall-hive, it is very damaging to those in single wall-hives.

Honey that is thoroughly candied should have added when it is liquefied about half a pint of water to each twelve pounds. This will keep it in the liquid state several weeks longer than it would remain so if the water was not used.

Elevate the back ends of all hives that are left on the summer stands. This will aid the bees to remove the dead bees and other dirt when the weather is warm enough for the colony to take a flight, and will also prevent the water from running in at the entrance.

If any hive has a small entrance, it is a good plan to enlarge it. If not convenient to do so, make one or two holes with an inch bit, about two inches above the regular entrance. Then in case the bottom one gets closed with dead bees, the hive will have plenty of ventilation and the bees a chance to fly.

It is true, and experience has demonstrated the fact, that 8-frames are much better than 10-frames at any time of the year. Bees in such hives store more honey and winter better.

CARE OF THE APIARY FOR NOVEMBER.

The thoughtful beekeeper at this time has his apiary in order for the coming winter. The colonies that are to be left on the summer stands, are packed, and those that are to be placed in the cellar or bee house are prepared and ready for immediate removal.

We would not advise placing bees in the cellar or bee house as long as the weather continues pleasant and mild. Watch the weather reports. When solid cold weather sets in at the far west, then it will be time to put the bees in warm quarters. "One swallow does not make a summer" neither does one cold day make a winter. Nevertheless, between Nov. 20 and Dec. 1st is usually the proper time for placing the bees in the cellar.

Sometimes during the latter part of winter many colonies suffer badly for a good flight. If such colonies could have had a flight two weeks later in the fall, it would have been of great advantage to them.

Give the bees every chance to fly when the weather will permit, and before the snow covers the ground. If a colony of bees can have good flight about Christmas time they will be pretty sure to go through the winter in good condition.

SPECIAL NOTICES.

TO OUR READERS.

Bear in mind that any yearly subscriber for the APICULTURIST can get one fine queen at any time between June 1 and October 1, by remitting 50 cents in addition to the $1.00 for one year's subscription. The 50 cents to be remitted when the queen is needed.

If a queen is not needed and you would like to examine our queen and drone-trap, we will mail one to your address on receipt of 35 cents. If neither of the above is wanted, a copy of the THIRD EDITION of the BEEKEEPERS' HANDY BOOK will be mailed to you for 50 cents. The book contains 300 pages and 100 fine illustrations, giving our method in full for rearing queens by the simplest methods yet devised. Regular price of the book is $1.10 by mail.

The above offer will continue good till January 1, 1887. Now is a favorable time to subscribe for the "Api." Subscribe at once and have your subscriptions commence with the October number as that number is full of interest to every beekeeper. HOW TO WINTER BEES is given in eleven essays from the pens of the leading apiarists of the country. No one should fail to read these essays as it might be the means of saving thousands of colonies of bees. Single copies of the above number will be mailed on receipt of 10 cents. If any old subscriber would like to make some beekeeping friend a present of the October number, we will mail them free on receipt of the proper ad-

dress. Like Mr. Newman we are inlending to increase our subscription list 5000 or more inside of the next year. We can easily do it, provided each reader will send us one new subscriber. Are not the inducements offered sufficient to "enthuse" every reader to make an effort to send us one new subscriber?

If any subscriber is in want of another publication we will obtain it for him at a reduced price, say at 20 per cent discount.

Discount on Prices of Supplies.—We are prepared to fill orders for any kind of goods found in our price list, and a liberal discount will be made to all customers who will purchase this fall or at any time before Jan. 1, 1887.

Discount as follows: one dozen Drone and Queen-traps, one made up (thirteen in all) $2.75; regular price, $3.50. Sample, latest improved, by mail, 50 cents; regular price, 65; or Trap and Apiculturist, one year, $1.35.

Queen-nursery, 18 cages, which Mr. Doolittle says is the best he has seen, by mail, $1.25; regular price, $1.60.

We intend to sell goods very cheap from now until Jan. 1, 1887, and a most liberal discount will be made on all goods except the Bay State Reversible Hive; the price for that is as low as we can place it.

We desire to retain on our list the name of every subscriber and as an inducement for all to renew and to new subscribers a discount of from twenty-five to fifty per cent will be made on any one article found in our list of supplies. Our price list of apiarian supplies will be found on the last pages of any number of the "Api."

To Correspondents:—We receive much interesting correspondence that certainly would be inserted in the Apiculturist, but it is so mixed up with business matters, and written on both sides of the sheet, that we cannot use it; we have not time to copy it all. Please write on one side of the paper only and not mix matters so confusingly. Send us any items of interest; they are always welcome.

HIVES IN THE FLAT.

No one should purchase one of our new hives in the flat, thinking he can "put it up" without a model to work by. The Bay State Reversible Hive is far from being a complicated one in construction, yet it is unlike any other in use.

MARKETS.

The condition of the honey market is about the same as in October, therefore market reports are omitted this month.

WASHING HIVES INSIDE WITH WHISKEY.

Westfield, Vt.

Mr. Editor: Last season I had two swarms go off to the woods after being hived. Some old people told me to wash my hives with water mixed with whiskey. I did so and lost no more bees. Perhaps I would not have lost them anyway had no whiskey been used. Is this an old idea?

S. B. H.

Ans. We cannot say how old the idea is, but it must be quite ancient, and a most foolish one, too. In washing the hives with whiskey and water they were cleansed of the cobwebs or other foreign matter, and thus made habitable for the bees. The old box-hive apiarist washes his new hives with molasses and water, but the beekeeper of the present day uses nothing of the kind to cleanse his hives, to prevent the bees from deserting them. Tell your old beekeeping friends to read the bee publications of the present day, and they may give up such old ideas.

TO PREVENT TWO SWARMS FROM UNITING.

When several new swarms issue at about the same time they may be prevented from uniting provided one

The American Apiculturist.

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ENTERED AT THE POST-OFFICE, WENHAM, AS SECOND-CLASS MATTER.

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For the American Apiculturist.

ITALIANS vs. HYBRIDS.

R. L. TAYLOR.

A STRONG PLEA FOR HYBRIDS.

THE question has occurred to me whether apiarists have not laid too much stress on the supposed superior excellence of the Italian bees. I shall make no comparison of them here with the German bee nor shall I now question their superiority, for the purposes of the student or of any who keep bees for pleasure or for the sake of open-air exercise; but for the specialist in the production of comb honey I contend that the so-called hybrid, the cross between the German and the Italian bee, is immeasurably superior. After several years' experience with hundreds of colonies, I take the ground with surprise that any should be found to differ, that he who makes the production of comb honey his principal business, cannot afford to spend his time in the busiest part of the season contending with the idiosyncrasies of the Italians.

My readers will bear in mind that I am looking solely from the standing point of the producer of comb honey; for the producers of extracted honey, the objections to the Italians are of somewhat less force. My chief reasons for the position above indicated are as follows:

First, the disposition which the Italian possesses to keep on hand a large store of honey as near to the brood as possible.

The evil of this appears as soon as the spring opens. The Italian is slow to attack capped honey especially that in the outer combs. She wants enough always in store to provide for some possible season of dearth. She chooses to rely on her own prudence and economy, rather than to exercise faith in the bounty of the opening season. The consequence is that the spread of brood is not increased as rapidly as is desirable, and it requires considerable manipulation to overcome the disadvantages resulting from this tendency.

Again, at the opening of the season for surplus honey, and from that time till the close of the season in the autumn, there is an ever increasing inclination to clog the brood combs with honey, so that the force of the colony is greatly reduced before the close of the clover and linden season, and rendered almost worthless so far as surplus from fall flowers is concerned. You may say extract from the brood-chamber; but, granting that that would in any degree remedy the evil, undertake to extract from two or three hundred comb-bridged brood chambers filled with clinging Italians in the height of the season, with swarms issuing and all the seasonable work crowding, and you will readily agree that it is impracticable. But suppose you should succeed in the work of extracting what would be your chagrin to hear your yellow-banded economists chuckling with delight that you had given them a place to bestow their burdens without the necessity of prolonging their journey to the sections.

Some one may say, you have not tried "my" strain of Italians. I may

not have tried the best strains of Italians, but suffer me to say that I have no faith in the purity of any strain that does not possess the above trait. There could not be a more fickle standard of purity than that of color. Many years ago I obtained two Italian queens the first I had ever seen. From their first eggs I reared a lot of queens, which were mated before there were any Italian drones in my apiary, and I believe there were none in my neighborhood, as there never had been any indications of Italian blood among my bees until I had introduced it as above, yet one-half of this lot of queens produced bees as yellow as any I ever saw, the progeny of one of them being very plainly and uniformly marked with four yellow bands. Let him who is incredulous cross a white leghorn cock with dark brahma hens, and if color be the sole standard, the chicks from this cross will usually be the finest sort of white leghorns.

Second: my second objection to the Italian is the tenacity of her foothold.

This is some advantage in searching for queens and in other manipulations when it is not desired to divest the combs of bees, but in all other cases a vexatious, time-consuming drawback.

Smoke has little effect on your pure bur-footed Italians so far as driving them from the comb is concerned. In removing comb honey during the height of the honey flow this can be overcome without much difficulty. But the difficulty increases as the season progresses till at last it becomes almost unendurable. I think I am quite within bounds when I say that (except when the honey flow is not so great that the bees will not cease their work on the flowers to notice honey standing uncovered in the apiary,) the work of removing honey from the hives will progress twice as rapidly with hybrids as with Italians. This is no small item when there are several tons to be removed.

Third: comb honey produced by Italians is never so regular in shape nor otherwise so fine in appearance. They never fail to bulge it or bridge it or fasten it to the separators on the slightest provocation, and such defects not only cause much leaking and injure its sale, but cause much more time to be consumed in crating.

Fourth: Italians gather much larger quantities of propolis and dispose of it so as both to injure the appearance of the sections, and to interfere with the rapid manipulations of the different parts of the hive.

Fifth, and finally: in my somewhat extensive experience I find that the hybrids can be relied on to produce from twenty-five to forty per cent more comb honey than Italians. The hybrids are always the ones from which I get my largest yields and all through the season they exhibit the more push, courage and enterprise.

And in my opinion, there is but one point in which the hybrids suffer in comparison with the Italians and that is the irascibility of their temper. By the amateur and the beginner, this trait is greatly magnified and for such no doubt the Italian is the preferable bee. But for the experienced apiarist who has lost all concern about stings, I am forced to the conclusion, though formerly greatly prejudiced in favor of the Italians, that the hybrid is very much to be preferred.

Lapeer, Mich.

For the American Apiculturist.

INVERTING vs. CROWDING BROOD COMBS.

JAMES HEDDON.

MR. EDITOR:

IT seems that Mr. J. E. Pond, jr., of your state, has now decided

against reversing brood-combs, and proposes to substitute for the advantages gained by inversion, the method of crowding the brood-combs closely together.

About twelve years ago, when I had in use nearly 100 colonies, I experimented largely with this same comb-crowding method, and like Mr. J. T. Hawk, of Denison, Iowa, as found on page 858 of *Gleanings* for 1886, I abandoned that method of attempting to gain the desired results.

Once in conversation with Mr. T. F. Bingham of Smoker fame, a beekeeper of a quarter of a century's experience in producing comb honey on quite an extensive scale, upon this same subject of the best distance apart from centre to centre, for the spacing of brood-combs, Mr. B. warmly advocated one and a half inches, making many good arguments in its favor both for its use in summer and winter.

We are all well aware that Mr. D. A. Jones, and very many other skilful apiarists much prefer to wide-space their frames for winter. Now I am not only willing, but glad to be placed on record as saying that no system of comb spacing which requires two respacings per annum, will ever become popular. I am firmly of the opinion that real progress in mechanical construction and manipulation, connected with honey producing, must tend toward despatch and away from complication. We must learn to accomplish all the desirable results as understood in modern apiculture, at the same time approaching, as nearly as possible, the little amount of labor that was connected with the old box-hive system. He who does not do this, it seems to me, must be left behind in the race; so I repeat that semi-annual changes in the spacing of the combs of our brood-chambers will never become popular.

Besides my experiments in that direction, I have practised and tested inversion of brood-combs, on an extensive scale, during the past four years, having now in use about 6,000 Langstroth, suspended, reversible frames and a considerable number of reversible hives containing reversible frames of another pattern.

Mr. Hawk, above referred to, also states his failure, or partial failure, to make reversing unload his brood-chambers of honey; but as it is a fact that very many others have reported success, and as I have stated in a former article that reversing might, if improperly applied, tend to increase the amount of honey stored in the brood-chamber, is it not likely that Mr. Hawk hasn't quite mastered the science of inversion? I believe with Mr. A. I. Root, that he who once uses invertible-frames scientifically will never abandon their use.

We would no more think of constructing another frame, non-invertible, than of going back to the use of 6-pound, glass honey boxes.

That careful experimenter and still more careful advocate of untried implements, Professor Cook, says in the last edition of his invaluable "Manual of the Apiary," page 133, "For the past two years I have used the reversible frame which I find so valuable that I shall use it largely in future. . . .

By inverting we secure the firm attachment of the comb to the frame along all its edges, and can force our bees into the sections at the very dawn of the honey harvest." A little farther on, he says, "These frames reverse very easily, and I do not know a single person who has thoroughly tried them, who does not value them highly." The result of my experiments with frame-spacing, has been to adopt a uniform distance of $1\frac{3}{8}$ inches from centre to centre.

I am aware that the inversion of combs is not natural, but artificial; that bees have never been known to invert or show any desire to have

their combs inverted. The same is true of changing the spaces between them, and very many other manipulations that science has proven are very advantageous. I am aware that 1½ inches is the average distance chosen by the bees when in nowise guided by human intelligence; but as it is a fact that in many respects, we cannot afford to work against, or other than encourage the natural instincts of the bee, it is also true that in many ways we must do just that, if we expect to attain the highest success.

Professor McLain has written me that he is not yet sure that long practised inversion of brood, will not degenerate the quality of our workers. Although I can see no tendency in that direction, after four years' continuance of the practice, yet I am aware that in an evolutionary sense the length of my experience is much too short to warrant a wise decision; yet if such should prove to be the case, I shall not be the loser for I find after a third season's use of my new hive that the judicious use of a horizontally divisible, alternating brood-chamber, accomplishes nearly if not quite all we gain by inversion, besides its very many other useful functions.

But I am willing to go to record as favoring the inversion of brood-combs, and stating that it is my belief that divisible, alternating brood-chamber mentioned above, is the only practical substitute for it.

Dowagiac, Mich.

For the American Apiculturist.

APICULTURE IN CALIFORNIA.

A. NORTON.

HOME OF THE CALIFORNIA HONEY BEE.

ED. APICULTURIST:—This is the season when articles for bee papers cannot be expected to be suited to all sections and readers. The topic of wintering bees, so important in the east to-day, has very little interest attaching in California where bees can fly with impunity nearly every week throughout the winter, and, rainy weather excepted, I might say almost every day from 10 A. M. till sundown at least.

Therefore with the certainty that nothing can be appropriate to all, but that beekeepers have more leisure to read general matter, I may venture to dwell upon some of the characteristics of apiculture in this state.

The typical California "bee-ranch" must be sought in the southern portion of the state.

In the central counties, it is true, are, here and there, localities where beekeepers and their stocks are many; and where wild bees are abundant in trees and rocks. Even the northern counties produce bee-pasturage of their kind; and now and then, as well as in Oregon, an enterprising and progressive man keeps bees after modern methods, and becomes the pioneer of an industry which he may have the pleasure at some time to see established in his region.

But it was the product of the southern coast counties that made California honey famous; and it is in those counties to-day that the apiary is managed in true California style with those distinctive features that render a California bee-farm and its surroundings different from other apiaries and interesting to beekeepers in other states. In the central counties not nearly so many colonies are generally kept in each apiary; the localities are not so far out of the world; and the industry is by no means such a recognized factor in the prosperity of the community. The description of the real bee-farm therefore may not fit these other apiaries in all particulars and it may even seem a little unreal to beekeepers in

more distant portions of the state. We will betake ourselves in imagination, therefore, to a section where, even in towns of a thousand or more inhabitants, we may frequently find conversation turning upon weather and markets, experience and methods, with particular reference to the honey crop. Rough, frowning mountains fill such a region. At intervals their huge masses have been torn asunder almost to their foundations.

The chasms thus formed are canyons, whose narrow floors make tortuous passage-ways in from the valleys between the ranges. Their side walls are high and steep, sometimes almost vertical for hundreds of feet. The mountains, looming high above, are dark with sage and chaparral and dotted here and there with taller growth of shrubs and trees.

It is in such places that Nature has scattered her choicest floral treasures; and at every turn, in obscure nooks and rocky clefts on mountain side, and canyon bottom, grow exquisite garlands of varied blossoms.

And it is in such a place, where the grand is commingled with the beautiful, remote from centres of habitation, that the beekeeper erects his humble hermitage and provides homes for his teeming swarms. The lot he has chosen is by no means free from difficulties; his life and labor have their brighter and darker side,—nay, like the canyon walls that depend on the shifting sun, the same side is alternately light and dark. It is tinted with romance yet shaded with loneliness and hardened with reality. And if his be a prosaic mind, it will be blind to romantic colors and will see only the outlines of the practical and appreciate mainly its advantages and disadvantages. Still he labors with a will and makes the most of what he finds around him and proves again that happy homes may be made in lonely places. An unpretentious cottage by the mountain stream, a yard, a garden, and small building according to his needs, and he has done with side issues.

A bee-yard in some level situation thickly populated with bees whose homes are arranged in streets and blocks, an extracting house,—these provided and he has attended to the main necessities of his enterprise.

Here he may pass the days amid the glories of our California climate stimulated in his labor by the hopes of moderate return. And, as night comes on, his narrow surroundings seem still more contracted, when all are veiled in shadows and the solitude is relieved only by the screaming of the night bird and the singing of waters near his door.

Having seen the habitation of the beekeeper and his swarm, it remains to observe him in his practical operations.

Gonzales, Cal.

For the American Apiculturist.

HISTORICAL EVENTS.

C. W. DAYTON.

How tumultuous was the advent of the reversible frame and sectional hive! What a strife for the most practical reversing device! When the device was found it was applied; but, lo! where are the reports of its successes?

Those who were loudest in its praise may be observed to fall and quietly steal away. There is a time for everything and it is quite certain the reversible frame that came on time will soon depart. The only trouble was that there was too much labor for the money. Probably there were no less than 100 different contrivances used to accomplish reversion of brood-combs; but the one which seemed the most practical to

me was of my own invention, but I have seen fit to follow in the tracks of others so that I am quietly stealing away.

To speak the truth I never could see much, if any, advantage in reversion except to cause honey to be carried from the brood-chamber into the surplus receptacles; but again I remember that honey did not accumulate in the brood-chamber when the brood-chamber was not too large for the capacity of the queen, or when there was a lack of surplus room. When the Langstroth frames were given to beekeepers, there began a grand season of prosperity; but as nature and custom must have it, the prosperity is getting monotonous and a change is desired.

This change or revolution, as some have seen fit to call it, was expected in the reversible frame. Where the most forward ones had worked the matter up to the highest pitch the swaying indicated that they were mistaken and must retire.

Then came a short lull or rest as of boatmen resting on their oars. Then the leaders, or those who attempted to say and do the most, began to feel the chagrin; and being courageous, and bound not to be outdone, launched out for something to maintain an appearance and settled upon sectional hives. Had they stopped a moment to view the situation it is probable that they would not have taken so great a stride as lies between the reversible-frame and sectional hive. It is quite apparent that the two extremes were adopted while the happy mean remained to await the grasp of other hands.

It has always seemed reasonable that a revolution should come to apiculture. Its history needs such revolutions that it may be complete. There have been several already and I feel safe in saying that the end remains unsurpassed.

The Langstroth frame brought a *great* revolution and I believe that when we contrive to prevent swarming and drone production, and succeed in securing our honey just where the bees wish to store it, instead of building up the colonies to the swarming condition and a little beyond before the bees enter the sections, another revolution will be the result.

As one is not supposed to talk of something he knows nothing about, I will say that I have invented and tested a contrivance of this very description and that it meets every advantageous requirement with one exception. With its help an apiary was worked through this season without the issue of a swarm, and the sections were placed where the bees wished to put the honey.

When it was first invented, I supposed it combined ideas outside of which a meritorious contrivance to meet similar requirements could not exist; but, as I have since been told that there are those of greater excellence under way of perfection, I am waiting for future developments.

When I contrived the fixture, of which I have spoken, it was supposed that one reversal of the combs was death to all embryo queens; but I have since learned that it is a mistake.

In order to have the queen cells destroyed, because of inversion of the combs, it becomes necessary to employ inversion of the combs once in every five days. In using my contrivance, the inversion of queen cells with the combs in single-story hives is quite practical; but, if there are several stories or cases to be removed, before the lower story containing the brood is reached, it renders its use for this purpose practically out of the question. When we have our comb honey built in that part of the hive where the bees wish to store the honey, and when we are enabled to take complete advantage and control of the swarming impulse, then will our methods be a step in advance of the methods practised to-day.

In the methods practised heretofore the queen has been allowed to travel and inspect at will; and the idea that the liberties of the queen might be restricted without detraction from profits seems to have hibernated.

These ideas are not given to foretell or predict any certain revolution in apiculture. Indeed it might require a long time, and much contrivance of many minds, to effect a revolution. The haste and impetuosity accompanying the introduction of the reversible frame and sectional hives were the most active agents connected with their downfall, and well illustrate that a few cannot maintain an enthusiasm for a large company.

If the ideas are worthy, let us bring them on the stage quietly, like the lamb rather than like the lion.

Bradford, Iowa.

For the American Apiculturist.

BEE CULTURE IN TEXAS.

MRS. S. E. SHERMAN.

IGNORANCE OF THE HONEY BEE IN THE LONE STAR STATE.

My neighbors and friends appear much surprised when, in answer to their inquiries if the moth or webworm does not kill a good many of my bees, I tell them that I have never, so far, lost a colony from that cause. That seems to be the great dread among box- or gum-hive bee-keepers generally.

I am often astonished at the ignorance that exists among otherwise well informed persons in regard to bee culture. They don't know that if a colony from any cause becomes queenless it will soon dwindle down and die out; or, as they say, the worms killed my bees. Neither do they know how to re-queen a colony. I have been asked how many kings there were in a hive; what was the use of drones any way? and was once requested to show the queen's throne. Often, in showing persons my observatory hive, I have had the drones pointed out as the queen. In speaking of my extractor, I was once asked if I put it inside the hive and ground the honey out. Another party upon my showing it to him was very much astonished and said that he had studied a great deal about how one was made and had decided that it was a little squeezing machine. I believe that I have never shown it to any one that had formed anything like a correct idea of it. One lady told me that her family had had bees for twenty-five years, and that so far as she knew the bees that they now had were the same ones that they had bought twenty-five years ago. Notwithstanding they have owned bees so long, when she wants honey she sends to me for it.

There have quite a number of swarms of bees come to me when they are starved out at home. The neighbors now, the first time they see me after losing a swarm ask if, on a certain day, a swarm of bees didn't come to me. I always tell them to come and get them if they want them; sometimes they come and sometimes they don't. I was told a few weeks ago that it was thought that my getting the Italians and introducing them here had caused the native bees to starve. The gentlemen said that it was upon the same principle that a German could live where a common American would starve.

Since my last article was written we have had fine rains and my bees have done better than I thought they would. I have extracted 1036 lbs. and have a small amount of comb honey still on a few hives. My bees are very strong in number with lots of brood in their hives and the queens still laying. They are still

gathering some honey. My best hive gave me 140 pounds extra honey. I had it tiered up four stories high. The two lower stories I never disturbed at all. It is three stories now for winter. This colony has never swarmed and I have never seen a drone in or about it.

Salado, Bell Co., Texas,
Oct. 14, 1886.

WINTERING BEES, AND OTHER MATTERS.

L. E. BURNHAM.

THE season for preparing bees for winter is at hand; and the question with beekeepers now is: What is the best method of packing bees and how shall we winter successfully?

I shall prepare my bees in the same manner as heretofore advocated by Mr. J. E. Pond, jr., Foxboro, Mass., in the back numbers of the "Api" which I have practised successfully for the last five winters; and never having lost a colony by this method, I do not see how one could improve on it by adopting any other system. It is very simple, inexpensive, and is as follows: Place a burlap-sheet over the frames and fill the upper story with dry forest leaves (I prefer maple leaves). If the colony should be weak, remove the four outer frames and substitute for these chaff division-boards. This is for single-walled Simplicity hives. I have never used a chaff-hive as I have had good success without them. When packed as above, my bees withstood our severe winters and came through in good condition.

COMB HONEY WITHOUT SEPARATORS.

After trying another season to produce comb honey without separators, I am constrained to think that it is almost impossible to do so, and have good straight combs, that will admit of glassing and crating, in case we wish to ship our honey to distant markets. While I admit that we can obtain a larger surplus without their use I think that it is more than counterbalanced, by having every comb straight, true and merchantable.

PERFORATED METAL IN HONEY-BOARDS: CROSSWISE *vs.* LENGTHWISE.

I wish to call attention to a fact which I have observed this season, and which I have never seen mentioned in any of the bee journals. It is this. I find by actual experiment (no theory) that my bees work better and store honey faster where the hives are furnished with honey-boards in which the perforations run crosswise of the brood-chamber instead of lengthwise. I have tried both ways under equal conditions and with *very* unequal results.

Can you give any reason for this Mr. Editor, and have you ever heard it remarked by any one else?

Essex, Mass., Oct. 25, 1886.

For the American Apiculturist.

NOTES FROM CANADA.

R. F. HOLTERMAN.

THE most important step in the way of opening out a honey market for Canada, viz., the shipment of comb and extracted honey to the colonial exhibition is meeting thus far with success.

The honey has been safely placed upon exhibition at Kensington in a building especially erected for the purpose. About twenty per cent is first-class comb-honey, the balance extracted. The bulk was secured from clover, the balance from linden.

Messrs. S. T. Pettit, the president of the Ont. beekeepers' association, McKnight, Corneil and Jones are with the exhibit. They and several other Canadian beekeepers have

worked hard to make the undertaking a success and their efforts bid fair to gain that point.

The British beekeepers make some extraordinary remarks upon the display: the honey has not the rich amber color theirs has; the sections lack that solidity their comb honey has. In Canada, and I believe in America, we find beyond a certain point there is nothing to be gained by that solidity in appearance, and as to two-pound sections in Canada at least, their day has passed. As to the amber color, it is a matter of education and the natural taste of the eye as to which pleases the more: the beautiful clear light colored or the beautiful amber-colored. Also as to flavor—here the buckwheat, which has a distinct enough flavor and is dark enough is rarely preferred to the clover. Time will tell how permanently—for temporarily at least the British public are pleased, yes, more, delighted with the flavor of Canadian honey—the undertaking will succeed. We find in Canada that much is to be gained by pushing sales and attracting the attention by displays of honey; it increases the demand and consumption permanently and no doubt the British beekeepers will yet see that they owe the Canadian beekeepers a debt of gratitude for this display and sale of honey.

Brantford, Canada.

HONEY AS FOOD AND MEDICINE.

Before the use of sugar became general, honey was the sweetening medium in regular use all over the world; and, so far as health is concerned, it would have been better had it so remained. The cultivation of the sugar-cane, however, drove into the shade the production of honey. Sugar itself in time was destined to be partially supplanted by a commoner substitute—beet sugar; and this again in turn (for brewing, and many commercial food processes, whole fruit-preserving, cheap sweets, and so on) has, to a considerable degree, had to yield to a still cheaper, commoner substance named glucose, an unwholesome sweet compound made out of a score of things, from potatoes to sawdust and rags, by boiling them in a mixture of water and certain acids. Had the science of beekeeping been in its present stage when the sugar-cane industry began its rapid growth, the use of sugar would have been considerably retarded by the contemporaneous march of its more wholesome competitor honey which held the field. In those dark ages, bees were suffocated by sulphur fumes in order to obtain a far more impure honey than is in the market at this day, when the lives of the bees are preserved by scientific methods: which also guarantee to us the absolute purity and cleanliness of the honey, besides telling us, indeed, the actual source when gathered, whether from fruit-blossoms, clover, or heather. Had the rational culture of bees marched along with scientific sugar-making, we should, I repeat, have heard less of cheap and nasty substitutes for the honey of the ancients. The number of bee-hives, instead of being kept about the same by the natural increase by swarming, and the cruel decrease of the sulphur-pit, would have multiplied at a similar compound rate to that of cost of nails in the proverbial horse-shoes. Honey would have been produced at so low a rate that it would have held its own as the most delicious food, sweetmeat, and saccharine diet, either rich or poor could possess. Mead and metheglin, honey wine, honey vinegar, and honest honey drinks, would be now used by all instead of so many that are nasty and unwholesome.

But for cane sugar there would probably not be so many millions of artificial teeth in daily use as there

are, the grape sugar of honey being at once fit for assimilation, whereas cane-sugar (one has noticed how the eating of sweets increases thirst!) calls on a laggard saliva to convert it into grape-sugar, and rests in nooks and corners among the teeth, fit food and breeding-ground for caries, schizomycetes, sphæromycetes, and what not, which turn it into acid, the said acid acting upon the lime of the teeth and dissolving them. Because cheap cane-sugars have been taken into the stomach in unreasonable quantity, the liver has been unable to transform them, the result being the disordering of both organs. Dyspepsia and biliousness are probably caused more by the use of cane-sugar than most of us think, indeed, an authority (Mr. F. Cheshire) tells us that if cane-sugar be injected into the blood, it is at once excreted, which is not the case with grape sugar. Let us then remember that it is only grape-sugar which the system can at once use as heat-giving, fattening food, and this it is which honey supplies ready prepared for us by the bee in Nature's laboratory. Honey will carry along with itself into the stomach for digestion more bread (starch, etc.) than butter will, each helping the other; and a pound of honey at 8d. or 9d. per lb. will consequently go as far as 2 lbs. of butter, costing 3s. Here there is decided economy. It can be used for almost every purpose we now use sugar for: and by the principles of modern beekeeping, it is becoming more plentiful and cheaper year by year. A great objection to its free use in past years was its comparative high price, owing to the restricted supply caused by the annual destruction of bees. This is now removed. Another serious objection was the fact that honey disagreed with many people. The wonder is that it agreed with any one, for a common way of obtaining it (after smothering the bees) was to cut out the combs containing young bees and pollen, besides honey, and squeeze the whole in a cloth, straining the result for use. It will thus be easily seen, without entering into details, how much objectionable matter was thus imported into the honey which would tend to disorder delicate stomachs. All this is now changed. No brood (young bees) is now allowed by the beekeeper to be hatched in the clean, snow-white sections of white basswood we see in the shop-windows of fruiterers and grocers who sell the honey, the whole of which honey and comb may be spread on bread and eaten, the cells being so thin that it takes six cell-walls to equal the thickness of a sheet of ordinary note paper. — *Exchange.*

QUESTIONS AND ANSWERS.

QUESTION BY ONE OF THE READERS OF THE "API."

SIZE AND SHAPE OF THE BROOD-CHAMBER.

Will you get Mr. Doolittle or some one who has had as much experience in bee culture to answer the following question:

1. What shape and size should the brood-chamber be in order to obtain the best results in points of wintering, honey-storing and handling the combs when extracting?

ANSWER BY G. M. DOOLITTLE.

To best give my views on this question, I will tell the "readers of the Api" how I have been led along until I have adopted what I now use, and have been using steadily for the past ten years, in the way of brood-chambers. When I first began beekeeping some seventeen or eighteen years ago, I used the regular Langstroth hive, holding ten frames. Soon after I got acquainted (by letter) with E. Gallup of Iowa, and from what he taught me by letter and through his article published in the *Am. Bee Journal* I was led to try some of his hives by the side of the Langstroth hive, which I was using. During the first

season of this trial, I became satisfied that the Gallup or square frame gave me decided advantages over the long or Langstroth frame; but being naturally conservative I tried both hives for two years more, at which time I was thoroughly convinced that I obtained one-fourth more honey by the use of the Gallup frame than by the Langstroth, the main reason for which lay in the securing of more brood in the square frame, at the right time, than with the other. Right here I wish to say that this getting of brood at just the right time so as to give lots of bees of the right age to go into the field at the commencement of the main honey harvest, has more to do with successful honey production than any other one thing connected with beekeeping. Failing in this point we fail in all, and my reason for adopting the Gallup frame was, because that by its use together with a division board, I could get more nearly the amount of brood in one week from the time I tried for it, than I could in two or three weeks with any other sized frame. So far, I had paid little attention to anything else save the size of the frame, for all apiarists of that day claimed that the size of the brood-chamber should be 2,000 cubic inches or above, the ten Langstroth frames and the twelve Gallup frames containing about 2,100 cubic inches. After using the Gallup hive for four or five years, I became satisfied that the brood-chamber was decidedly too large as the bees kept three of the twelve frames filled with honey nearly all the while. This extra amount of room was required, Gallup said, to insure honey for safe wintering, but as I expected to know each fall just the contents of each hive, I could not see the propriety of keeping these three frames full of honey for the purpose mentioned, so reduced the size of my brood-chamber to nine frames instead of twelve. The result was more than satisfactory, for I found on the first trial that I had increased my crop of surplus honey at least twenty-five per cent, while as a rule, the bees had abundance of stores for winter. This gave me a brood-chamber $12 \times 12 \times 13\frac{1}{2}$ inches holding nine frames $10\frac{3}{4} \times 10\frac{3}{4}$ inches square inside measure. To test the matter further I reduced a few to eight frames, thus getting a brood-chamber of exactly one cubic foot, but a year or two of trial convinced me that this was just one frame too small as the average of my queens would keep eight frames full of brood, where nine were used, while if only eight were used, I got only about seven of brood. The reason for this seemed to be that it required room to the amount of one frame for the pollen and little honey, they always would keep around the brood and in the upper corners of the frames, so that when I contracted the hive to less than the laying capacity of the queen, plus this frame, I diminished the working force of the bees, which thing was actually taking the dollars and cents right out of my own pocket.

Without dwelling further on the subject I will say that from years of experience I have seen no reason to change my mind and still consider 1,000 square inches of comb surface or 1,500 cubic inches as the right size for the brood-chamber of a hive, regardless of what size of frame is used. That I consider the Gallup or square form of frame the best, may be only one of my preferences, still I think for this locality I am right; but right or wrong on the frame question, I believe that all who will carefully test a brood-chamber of 1,500 cubic inches beside one of 2,000 or over, will agree that they want nothing larger than the 1,500 hereafter.

I might go into a long detailed line of reasoning regarding the safe wintering of bees in the square form of hive; tell of the ease and rapidity with which these frames can be handled for extracting, etc.; but I con-

sider that all these points are of minor importance beside the one of getting lots of bees in the right time for the honey harvest. Of course no one will think that I recommend only 1,500 cubic inches as the right size of a hive for extracted honey. This size is for the brood-chamber during May and June, and whatever else is needed by way of surplus for honey is added to this. For extracted honey, I add from 2,000 to 3,000 cubic inches, while for wintering I prefer using only from five to seven combs well filled with honey. Then again, I use only five frames when hiving new swarms as I have before stated in the AMERICAN APICULTURIST and with me no *set* size of brood-chamber could be adopted, only I never wish it larger than 1,500 cubic inches. The contracting to a smaller size is easily done for wintering or new swarms by means of dummies or division-boards.

ANSWER BY A. E. MANUM.

I don't know; that depends upon circumstances and locality, not knowing the locality of the questioner it would be very difficult for me to intelligently answer his question. In a warm climate a large frame like the L. or Quinby might give better results than smaller ones, and by using ten or twelve of these frames in each story perhaps better results would be obtained. Were I in a warm climate I would try a brood-chamber containing about 3,000 inches and use as many stories as the flow of honey would require. Of course one must study his location and the season of year when the honey flow is expected and govern his methods accordingly.

In the south I presume there is ample time to rear a large brood of bees early, long before any very abundant flow of honey, hence a much larger brood-chamber may be used to advantage in order to rear a large force to gather the honey in its season. While here at the north we have but little time to rear our bees before the first honey flow which usually commences about June 10th, and as April is a very unfavorable month in which to rear brood, we have to depend upon May; and sometimes the first half of May is cold and wet so that bees will not breed very fast, hence leaving us but a very short time in which to crowd our brood-chambers with working bees. It will therefore be seen that we here at the north are obliged to use a smaller brood-chamber than what might be used in a warmer climate.

After much experimenting I have adopted a brood-chamber containing about 2200 inches or 1,368 inches of surface of comb, inside the frames. My frames are $9\frac{1}{2} \times 12$ inside measure and 12 in number. I find that this size suits my locality and climate better than any other I have ever tried, both for summer and winter.

The thorough-going apiarist will contract the brood-chamber to suit the season. With me, if April and May are favorable for brood-rearing, I have no trouble in getting my twelve frames filled with brood from top to bottom by the first of June. In such a case I have plenty of workers to gather the first flow of honey as well as the last; but last spring was very unfavorable, especially the latter part of May. I was unable to get over eight to nine frames filled with brood by June 10th, at which time I ceased giving more combs, but used division-boards instead, as I always want the brood-chamber crowded with bees, let it be large or small.

ANSWER BY G. W. DEMAREE.

The frame hive is a compromise with nature, as pertains to the habits and instincts of the bees. The best hive for wintering bees is not necessarily the best hive for all purposes. It would be expensive, and for that reason impracticable, to furnish hives for wintering bees alone,

these hives for producing comb honey, and then again a different hive for taking extracted honey. For these reasons I find it profitable to use a a hive that can be made to answer all purposes in the apiary. Let us look at the matter in this light. The heavy two-story chaff hives will answer some purposes, but they are heavy and unmanageable. The light single-wall hives are cheap and handy to handle and can be made as good as chaff hives for wintering bees in, if they are properly packed before winter sets in.

A deep hive has some advantages for brood-rearing early in the season, but such a hive is inferior for storing surplus honey above the brood nest. Hence, as a compromise, I accept a shallow frame hive and I have found nothing better for all purposes than the ten-frame standard Langstroth hive which takes frames $17\frac{3}{8} \times 9\frac{1}{4}$. With this form of hive, the brood-chamber or queen's department is always the same except that it is capable of contraction by the use of division boards. When we wish to take extracted honey, we simply put on an upper story or super with its set of combs, or we may use half depth combs in cases and pursue the tiering-up plan. Or, if comb honey is wanted, section cases are used on the "tiering-up" plan. When extracting honey, I have taken the honey from frames of different size and shape all on the same day, and "use" is all there is in it. A man who had been *used* to setting combs on "end" in the extractor would not want to "hang" them in, and *vice versa*. The day of deep cases and and deep frames is over, the recent dive down to the half depth L. frames and their use for brood-rearing on the tiering plan, and the desperate struggle now being made to elevate this idea into a "standard hive," is sure to result in a compromise between the deep and shallow frame ideas, and the standard L. is not far from the happy resting place. I feel sure of this, for I believe that I went over the shallow-frame grounds as long ago as any one else, as may be seen in my articles in the "Api" and other bee periodicals, written several years ago, and my tendency is now back to the standard L. frames.

QUESTIONS BY HENRY ALLEY.

FASTENING FOUNDATION IN FRAMES AND SECTIONS, WIRED FOUNDATION, ETC., ETC.

1. What is the best and most practical method for fastening foundation in frames?

2. Have you ever tested any of the devices for fastening foundation in sections? Do they work satisfactorily and are they practical?

3. Is it a good plan to purchase foundation at this season (while it can be purchased at a price much less than during the honey harvest) and place it in frames and sections?

4. Would the cold weather have a tendency to loosen the foundation from its fastening where it comes in contact with the wood?

5. If good and heavy foundation made of best quality of wax is used, is there any need of using wire to support it in frames? Do you not consider wire a detriment instead of advantage?

6. Is not heavy unwired foundation much the better for brood-combs than thin-wired foundation?

ANSWERS BY HILAS D. DAVIS.

1. I cut a board one-half inch smaller than inside measurement of frame putting in two wire-nails at each end of board one-half inch from corners setting back five-eighths from face of board; when the frame is laid on the wire-nails it brings the foundation into centre of frame. I melt equal parts of rosin and beeswax. Cut the foundation to fit frame on three sides, and place it up to top-bar, then with a large iron spoon run the melted rosin and wax around the edges of three sides. This method is the best I have found.

2. I use a section foundation fastener. It is operated by a treadle and so arranged that one can handle the box and foundation with both

hands. Place the foundation $\frac{3}{16}$ of an inch more than centre of box, so when the pressure bar is operated it rests on three-sixteenths of edge of foundation, which is sufficient to firmly press the foundation into the grain of wood, and by same operation the presser is drawn off from foundation. This smooths it on to surface of box. If foundation is not too cold will make it firmly secured to box. I consider this method the most practical of any thing I have ever tested.

3. It is advisable to order foundation early having it delivered two or three weeks before you need to use it. I do not deem it advisable to put foundation into frames or sections until just before the honey flow comes on.

4. I think it has a tendency to loosen it. Heat expands the foundation while cold contracts it.

5. I have never been able to find any foundation that would not sag without wire when given to a large colony of bees during the honey flow, and quite often they will break down.

I use nothing but heavy wired, flat bottomed foundation for the brood nest. I think wire an improvement taking everything into consideration.

6. I find medium wired foundation better than heavy unwired and never use thin wired foundation for brood-nest.

ANSWERS BY A. E. MANUM.

1. I think the best way to fasten foundation in brood-frames is to use melted wax. I use a camel's hair brush for the purpose, inserting a short stick in the quill end to handle it by. The brush is not to be over one-half inch long. The wax is used quite hot but not so hot as to smoke or to scorch the brush. The heat is regulated by placing the lamp inside of a small box, on the top of which is tacked two strips of tin to hold the cup of wax over the lamp. No rosin is used with the wax.

For neat, rapid and accurate work the melted wax plan is also the best for fastening foundation in sections. The wax is applied on one side only, but on both sides in attaching brood foundation. For sections I use the smallest size of brushes, such as physicians use in applying medicine to the eyes. The foundation is placed on a bevelled block so as to hold it exactly in the centre of the section, the bevel being made so that when the wax cools, it will draw the foundation to a perpendicular line. The bevelled block is nailed to another piece so as to support the section in one hand easily. One quick stroke of the brush fixes the foundation and I have never had it fall down. I can easily put the foundation in 150 sections per hour.

2. I have never fastened foundation except by the above plan, but believe I can do it more rapidly than can be done by any machine. Besides, no machine can do the work half so well, and furthermore no overheated room is required in which to do the work.

3. Yes.

4. Not when fastened with melted wax, especially in sections. Heavy foundation will stand well in cool weather if the wax is put on heavily at each end of the strip or sheet.

5. No, not in my experience. I consider wire to be a detriment in brood-frames. It is a puttering, disagreeable job to put it in and when done is a needless and useless piece of work. I have tested it thoroughly and get fully as straight combs without it as with, and whether built from a foundation starter two inches wide or a whole sheet. It is well known that the best makes of foundation do not sag when properly used, so that there is no need of wire to support the comb. I should not think of using wire except I wanted to hive swarms upon full sheets of foundation, and that I would not want to do as as there is more money and less

work in hiving swarms on frames having simply starters of foundations two inches wide. The building of much drone-comb has not given me any trouble. In fact, I have had many colonies that did not build as much drone-comb as I think they ought to have built.

6. Yes, I prefer the heavy foundation without wire. It should run from four to five square feet to the pound.

ANSWERS BY G. W. DEMAREE.

1. I know of no better method of fastening foundation in brood-frames than the use of the putty knife, and melted wax.

A friend of mine used a machine which he purchased from some one, that was intended to press the edge of the foundation fast to the top bar, by one stroke of a lever, but it did not prove a success under my inspection. The length of the top bar of any brood-frame is too great to make such a plan a success.

2. I have tried a Parker fastener; but as it is usually made, the lever wriggles about too much to suit me. If a man had three hands, one to work the lever, one to hold the section in place, and one to hold the foundation in place, the Parker fastener would be a success. But in the absence of the third hand, I found it necessary to improve the little machine, by putting guides at the sides of the lever, so that the latter cannot wriggle out of line, and punch the section out of place, when it is thrust forward to press the foundation into the wood of the section. After improving Parker's little machine in several ways, it is not only practical, but a "joy forever." It is really a labor-saving little implement.

3. It is beyond question good economy to lay in a stock of foundation when it can be had at the lowest figures. If it is kept closely packed in a tight box it will not deteriorate in quality. I have tested this matter pretty thoroughly. I do not recommend the plan of adjusting the foundation in the frames, etc., a great while before they are ready for use; but if they are kept where they are undisturbed, and free from jars during cold, or cool weather, no harm is done so far as I have been able to see.

4. Alternate freezing and thawing, especially when dampness is present, has had a tendency to loosen the foundation where it was simply pressed to the wood, but where melted wax was used in addition to the pressing process, no trouble has been experienced in this direction.

5. My experience has been that only thin, and otherwise inferior foundation needs wires in the frames. A good heavy article of foundation made of a good quality of wax not more than five square feet to the pound needs no support under proper management.

Wire in honey combs is unnatural, and has proved a greater nuisance in my apiary.

6. I would answer yes, all the time.

ANSWERS BY G. M. DOOLITTLE.

1. Melted wax.

2. Have tested nearly all, but prefer the wax.

3. I think so, but many say no.

4. If fastened on all winter, it would; otherwise, not.

5. Fine, tinned wire works well with me what little I have tried it.

6. Would prefer the latter as it is less expensive and answers just as good a purpose. On the whole I prefer to let the bees build their own comb in its frame, except a foundation starter, one or two inches wide. In sections I use full sheets of foundation.

ANSWERS BY J. H. MARTIN.

1. Most permanent, one part rosin to two parts beeswax.

2. I have tested Parker's fastener and use it to a certain extent. I find

it does not hold the foundation for rough handling. When using sections in my home yard, I use the Parker. If the wax is kept at the proper temperature and care is used in pressing down every part, a starter seldom drops; the larger the pieces used the more liable they are to become detached. I have one apiary six miles from the home yard, and manage another nine miles off. I prepare my crates at the home yard and put them on a spring wagon and drive off at a good round trot. Sometimes we go over stony roads and things jingle; for such usage, the press is not over half as reliable as resin and beeswax. The latter method holds nearly, and generally, all, where they belong. The press is therefore practical if the sections are to be handled with care.

3. We have used foundation made the season previous with good success, and can see no difference in the time required to work it out. If the wax has lain in a pile of fifty or a hundred sheets, the interior sheets will keep fresh, while the outside ones and the edges will have a tendency to harden; but the softness of the wax can be restored by dipping the sheet in warm water before placing in the hive. We therefore advocate getting foundation in frames early.

4. Cold weather has no effect upon foundation fastened with resin and beeswax. We had some large size sections which were discarded and placed in a loft where they remained three or four years, and had scores of freezings. We recently overhauled them and found foundation bleached out nearly white, but still in position, and since seeing your question, regret we did not save and test the annealing or warm water process upon it.

5. That depends upon the frame. We use a frame eleven inches deep, and would wire either heavy or light to prevent sagging, and also to strengthen the virgin comb. We have also several hundred Heddon frames in use. These we would not wire, either with light or heavy foundation. It is not a detriment in any case.

6. We prefer six or seven square feet to the pound.

EDITORIAL.

From what we see in print from time to time, we judge that many persons are losing faith in bee culture as a business. We are told that the foolish and suicidal practice of inducing everybody to "keep bees," has had the tendency to flood the markets with the products of the apiary, and has brought down the price of honey below the cost of production, etc.

Suppose all this was true, how is the matter to be remedied now? Who has the right arbitrarily to rule from the apicultural field a part of the honey producers? All have equal rights, or according to our way of thinking ought to have equal rights, to the "pursuit of happiness," and if bee culture is our chosen pursuit, who has the right to ostracize us?

In our opinion the chronic grumblers who wish to keep the science of modern beekeeping in the dark for the one selfish purpose of keeping up the price of honey so that none but the rich can enjoy the "luxury," having failed in their conspiracy to monopolize the honey business, are the ones to retire. They are the dissatisfied parties, and as such, are the ones to give way to those who are willing to work for moderate wages.

The maxim which teaches that the "most good to the greatest number" works out the best results, will apply in this case, as in all others. Every man of ordinary forethought ought to have known that bee culture, like

every growing industry, would lose its novelty and settle down into *real business*.

When we speak of honey being low in price, we have on our minds the high prices of the past. We are satisfied that this is not the proper way to look at the matter. Let the honey producer settle the question in his own mind as to whether he can produce honey in his locality, at a fair profit, at such prices as he is able to obtain for his goods. If he finds that he cannot do that, he can look out for something else that will pay better. But we warn him that in all established industries he may as well make up his mind to meet bravely the sharpest competition.

We wish it understood that we believe that bee culture as a business will increase in magnitude in spite of the depressing influence of low prices for honey; and that improvements, in the future, of bee implements, in the hands of skilled apiarists, will make it possible to achieve greater things than many now dream of.

The Convention held at Indianapolis, Ind., must have been quite a tame affair. It really looks as if bee-conventions would soon be numbered with things of the past. So far as we have read the reports of the proceedings of this convention they lack the interest and enthusiasm that has characterized such meetings in the past.

Perhaps if there is any difference between the convention of 1886 and those held in previous years it was in the fact that the "crank" did not make his appearance with his usual cranky notions to occupy the attention and time of the meetings. Every circus has its clown, and unless the present year has been an exception to the general rule, every convention has had its crank.

The convention "crank" is the man who ordered a low price queen of some dealer and because his order was not filled by return mail to the exclusion of other customers he gets his "back up" and shows a strong desire to ruin the dealer by sending *his* side of the story to all of the bee-journals. Failing in this to get a full ventilation to his feelings and spleen, he next attends the convention even though he has to travel hundreds of miles to reach it. When the meeting opens he is ready for business. He rises and moves that such a man be pronounced a "dead beat" and fraud, and gives his reasons therefor. Fortunately those who attend such meetings are, in most cases, men of sense and all such cranky ideas are quickly voted down.

It is but a few years since the reputation of one of the largest supply dealers in this country was shamefully assailed at a convention held in the state of New York. A "cranky" beekeeper pronounced the person referred to a fraud. Before night, the newspapers of the city in which the convention was held had published the statement, and the newsboys were making a great handle of this piece of news in order to make rapid sales for their papers. Vote down the crank.

The Colonial Honey Exhibition has thus far been a grand success. About forty tons of Canadian honey is on exhibition at the fair, and a committee from the Dominion of Canada is in charge. Among the number is one of our well-known correspondents, Mr. S. Corneil of Lindsay, Ca. The committee will start for home about Nov. 16.

Mr. Corneil will favor the readers of the APICULTURIST with a full report of the exhibition, probably in season for the January number.

The following extract concerning the Fair is taken from a private letter dated London, Oct. 16, 1886.

"I never worked harder or longer hours in my life. We have sold tons of honey in 2 oz. tins at 2d. each. The best tin packages we have ever seen are made here. I propose sending you samples. We have also sold a large quantity of honey in 14 oz. glass jars, the prettiest seen. They are manufactured in France. They cost us 20 f. per gross, and sell them filled with honey for 10d., but we have to work for it."

American beekeepers should take a hint from the above, and follow the advice given in a late number of the APICULTURIST regarding this very point. Attend the fairs, take your honey with you, and find a ready sale for it. We expect to have some of the small tins above referred to, and will furnish samples when desired.

The Maine Bee Journal comes to hand bright and clean. We wish it success. Brother Hodgdon says, he has received many letters of encouragement. They are all right, and lots of them are received by all publications, but unless they contain a small amount of "filthy lucre" with which to pay for paper and printing, they cannot be considered of any special value. We should be pleased to receive about 10,000 such letters, provided they contain the name of some person who desires the APICULTURIST for one year and encloses $1.00 for the same. Don't be backward, friends; send the $1.00 and get in return at least $25 worth of valuable information.

Prepare for 1887. Now is a good time to think over last season's operation, the losses, mistakes and successes in the management of the apiary. Make your calculations as to what you intend to do and how to do it in time to carry into execution before the busy season opens. If you have discovered any new points, or have anything new that is worth printing, just send to us and we will gladly publish it for the benefit of the readers of the APICULTURIST.

J. D. Goodrich, our old friend of East Hardwick, Vt., made us a call the other day. Mr. Goodrich is a well known dealer in supplies, principally in fine comb foundation and white-poplar sections.

Wenham is but twenty-two miles, or just one hour's ride, from Boston. Our friends are invited to visit the Bay State Apiary, and we will entertain all to the best of our ability.

Facts about Honey is the title of a four-page circular issued by J. H. Martin of Hartford, N. Y. We presume that Mr. Martin gives each one of his customers for honey one of these circulars, as they contain some solid information concerning healthfulness and the curative properties of this natural sweet. We commend this idea and practice to all who have honey for sale. Such a method for acquainting the public with this most wholesome and delicious luxury must result beneficially to those who take this way of advertising their goods.

"Subscription expired" will be stamped on the wrappers of all whose subscriptions expire with any number of the "Apiculturist." If the reader desires the paper continued we shall be glad to do so, provided you make known your wishes by dropping us a postal card. Otherwise the "Apiculturist" will be discontinued when the subscription expires. We invite all to renew and send us with their own subscription at least one new subscriber. All who will do so may deduct twenty per cent for the trouble they take in the matter.

ITEMS OF INTEREST.

In an article on preparing beeswax for the market an English writer says the great secret of having a nice-looking product lies in the melting of it. He states that direct heat must not be applied, but that a water-bath furnishes all that is desired. To clear the melted wax and throw down any little particles of dross that may be present, he added one drop of sulphuric acid to every fifteen pounds. It will be well for our readers to remember the importance of the water-bath in making cerates that contain beeswax. The writer states that glucose, flavored with oil of rose, is sold for honey, and a mixture of earth, wax and paraffin, perfumed with oil of citronelle, is labelled "pure beeswax" and placed upon the market.—*Exchange*.

Mr. Charles Faust, Harvard, Ill., says, that melilot or sweet clover grows along the highway in his vicinity, and farmers, fearing that it will spread and make them trouble, are cutting it down before it blossoms. Mr. F. says that where sweet clover does not grow, rag or mayweed, which he thinks causes hay fever, will be found. While I have no knowledge on this last point, I do know, having grown sweet clover for several years, that it is beautiful, both in foliage and blossom. It is much superior as an adornment of the roadside to either rag or mayweed. It is a most excellent honey plant, comparable to white and alsike clover, or to basswood in value. It is slow to expand and in meadow and pasture is soon choked out by our cultivated grasses. When once in possession of a spot, it is easy to extirpate it if it is desired to do so. As is well known, sweet clover is a biennial and so must come from the seed once every two years. The plants grow from seed one year, and the next year blossom and die. Thus we have only to cut the plants while in bloom before the seed matures to extirpate the plants *in toto*. Two such cuttings in adjacent years will do the work most thoroughly. In view of all these facts we can hardly find a more safe and valuable plant for waste places, and for roadside planting. Farmers should encourage its growth both for its beauty and worth.

The North American Beekeepers' Society has a membership of one hundred and twenty-five, and it represents a territory in which more than 300,000 people keep bees, the annual honey production of which amounts to more than 100,000,000 pounds with a value of $5,000,000.

If you want the best bee-book extant send one dollar and ten cents and get a copy of the Third Edition of the Beekeepers' Handy Book, or Twenty-two Years' Experience in Queen-rearing. The author of this work has had nearly thirty years' experience in queen-rearing, and has probably reared more queens than any person living.

It is a fact, though perhaps it should not be stated under the above heading, as it is not at all interesting, that honey never sold at such low prices as it does the present season.

Remedy. Do not ship honey to commission houses to be sold at any price a buyer sees fit to offer.

November second was a fine, warm day, the first clear one after about eight days of rainy weather. While in the bee yard, we saw an Italian bee trying to sip honey from a head of red clover, a remarkable circumstance for the season. Since then, a friend who lives in another part of Wenham has informed me that, on Nov. 4, while passing through one of his fields, he heard considerable humming of bees and found a large number of them at work on what we call here "wild mustard" or charlock (*Raphanus raphanistrum*), a very pernicious weed among grain. The bees seemed to be gathering pollen mostly.

We have in the Bay State Apiary a nucleus containing about two quarts of bees and three L-frames. One of the frames was moved about four inches from the other two. Although the bees are gathering no honey nor yet are being fed, they are building two combs down in the empty space. Of course they cannot winter in that condition, so the queen will be removed and, at the proper time, the bees will be united to another colony. Bees building comb and gathering honey in the month of November certainly are curious facts.

Almost all bites and stings are destructive from their acid nature; consequently the cure is an alkali. Spirits of hartshorn is one of the strongest and is kept in almost every household, and you have only to pour some of it out in a teacup and dabble it on with a rag. Relief is immediate.

If you have not hartshorn, then saleratus is a suitable alkali. Every cook in the land has saleratus, and we are daily eating ourselves into the grave by its extravagant use; the use of half a thimbleful a week is extravagant.

Moisten it with water, and use as in the case of hartshorn. Or, pour a teacup of boiling water on as much wood ashes, stir it, and in a few minutes you will have an alkali. The lye of ashes will answer a good purpose, while the physician is coming.

Remember the principle—bite is an acid, the cure is an alkali.—[Hall's Journal of Health].

LETTER BOX.

Brief report by A. Wortman, Seafield, Ind.

My bees did well this season. I started in the spring with twenty-four colonies and increased to sixty-one full colonies and two nuclei. I got 1,750 pounds of comb honey and 350 pounds of extracted. The latter I extracted mostly from the lower parts of one and two frames in centre of brood-chamber to give room for them to cluster in winter, as I never saw frames so completely filled with honey before. My crop is mostly from buckwheat, golden rod, smartweed, etc.

Joseph M. Hamburgh, Spring, Ill., makes the following report:

The bee business has not been the most prosperous this season throughout this state, but in my direct locality I have no reason to complain. In one of my apiaries of forty-nine colonies, spring count, I obtained 5,500 pounds honey (extracted); and, increased to fifty-five, my total product will be near 9500.

Kingston, Somerset Co., Md., Oct. 18, 1886.

PROF. A. J. COOK,

DEAR SIR:

I take the liberty as a beekeeper and student of your manual to send by mail this day in a small box a *something* that makes excellent bee pasture as well as fine honey. It came in bloom in August and lasted until about one week ago and would still have been yielding honey but for a frost a few nights ago. The sample I send is a little old, but perhaps you can give the name nevertheless. I find it on low ground where the salt water tide and the fresh water meet, and do not find it any where else. It grows from one to two and one-half feet high, and the bees are perfectly crazy over it late and early when it is in bloom. Please send me the name or send it to the AMERICAN APICULTURIST as you choose and oblige many beekeepers in this vicinity.

JAMES W. MARSHALL.

ANOTHER COMPOSITE HONEY PLANT.

The plant sent by James W. Marshall, Kingston, Md., is the salt marsh flea bane, *Pluchea camphorata*. Like golden-rod, aster, boneset, etc., this belongs to the composite order of plants. We may not be surprised if at some time we secure some very valuable plant from this family, some plant that we may well afford to cultivate.

A. J. COOK.

THE BAY STATE BEE-HIVE.

WITH REVERSIBLE BROOD-CHAMBER AND SECTION CASES.

(Non-patented).

THIS hive was briefly noticed in the May number of the Apiculturist, and only enough space will now be taken to describe it as here illustrated.

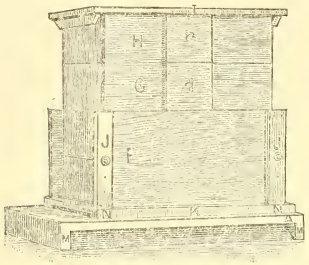

FIG. 1.

Fig. 1 represents the bottom-board, the brood-chamber and section-cases. Strips of wood, *MM* and *L*, are nailed to the under side of the bottom-board and not only serve as clamps but also as a stand for the hive. The latter, of course, should not rest on the ground as the wood would soon decay, but a brick or stone several inches in thickness should be placed under each corner.

The reader will observe that the brood-chamber rests on strips, *NN*, which are also nailed to the bottom-board. These strips are three-fourths of an inch thick thus bringing the bottom of the combs nearly one inch above the bottom-board, and affording abundant ventilation to the hive both summer and winter. A hive thus arranged will not "roast the bees out" during the hottest days, even though the sun shines directly upon it all day. The frames are closed ends, eight in number, and with the side boards, *F*, compose the brood-chamber which, if desired, may be reversed bodily, comb, bees and all at one motion. Two bolts (one at each end of the brood-chamber) having thumb-nuts hold the frames and side-boards firmly in place. All that is necessary in order to remove a frame is to loosen the nut at one end when the frame may be easily slipped out. The bees cannot stick the frames together, neither is there danger of crushing them in removing a frame. Two cases of sections holding twenty-four one-pound sections each are shown in the illustration. There are six broad frames, having four sections in each with two side-boards, and an iron bolt having thumb nuts on each end running directly through the centre of the case and clamping all firmly together so that the sections cannot sag at the centre. There is a bee-space between the top-bar of the frames and the sections, also passage-ways directly up through all the sections so that tiering-up may be practised to any reasonable extent. No slatted honey-board is needed as the broad-frames serve the same purpose, thus doing away with one useless piece that is usually attached to most bee-hives.

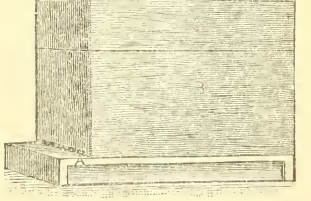

FIG. 1.

The hive may be used during the warm months just as presented in Fig. 1. If used in this way, that is, with the outer case removed, the frames and parts exposed to the

weather should be painted to preserve the wood.

Fig. 2 represents the outer case in four sections, bottom-board *A*, lower section *B*, middle section *C*, top section or cap *D*. These parts all rest upon the bottom-board and are held in place by the strips of wood *NN*, and *K*, on which the brood-chamber stands, as seen in Fig. 1.

There is a space, for packing in winter, of about two inches between the walls of the outer and inner hives; and at least four inches of packing may be placed over the brood-nest, sufficient to resist the cold or prevent the heat from escaping too rapidly.

There are fifty colonies in the Bay State Apiary packed for winter in these hives. Instead of using Hill's device over the frames for a winter passage, a canvas honey-board is used. A frame is made of strips of wood three-fourths of an inch square and to it a piece of canvas is nailed. This allows a space of about one-half an inch between the frame and canvas for the bees to cluster, or for a winter passage and proper ventilation. The packing over the bees is placed directly on the canvas honey-board.

More good practical points may be claimed for this hive than is combined in any other in use.

We can supply about five hundred of the Bay State Reversible hives during the winter; most of them will be sent from the factory in New York state. Those kept in stock here will be shipped to orders nearer Wenham than the factory.

If any one receives one of these hives made of poor lumber or in an unworkman-like manner, just return it to the shipper. We use no cheap lumber nor do any cheap work at this establishment. Do not wait until you want to use the hives or other goods before ordering.

SPECIAL NOTICES.

Premium worth having. — The *New York World* (Weekly) and the AMERICAN APICULTURIST will be sent for one year to any address in North America for $1.90; and in addition present to every such club subscriber a "History of the United States," containing 320 pages and 22 fine engravings, bound in leather and gilt.

This "History" will be sent free by express at the subscriber's expense; or will be mailed for 10 cents extra to any place within the United States or Canada.

It is arranged chronologically by years, from 1492 to 1885. Every event is narrated in the order of its date. These are not confined, as in other works, to political matters, but embrace every branch of human action.

This premium is worth the whole of the money sent for both periodicals, and should induce thousands to subscribe.

Those who renew as well as new subscribers can take advantage of the above liberal offer.

Each copy of THE WEEKLY WORLD contains 50 closely printed columns, 19½ inches long of solid reading matter, the History of the United States which is given to each subscriber 350 pages, THE BEEKEEPER'S HANDY BOOK, 300 pages and the American Apiculturist (each month) 32 pages, all the reading one needs for an entire week.

All the above will be sent by mail for $2 50. Is not this the best offer yet made by any publication?

THE HOMES OF OUR FARMER PRESIDENTS.

The *American Agriculturist* issues another in the series of engravings illustrating the "Homes of our Farmer Presidents," sixteen by eighteen inches in size, and presented to all subscribers for 1887. All new names for 1887 which are immediately received are entitled to all of the engravings for next year and those issued this year, also *American Agriculturist* for balance of this year. The Nov. No., with 170 illustrations and articles by fifty well-known writers, together with a proof of one of these engravings, showing what they are, sent to any address on receipt of six cents for mailing. Address *American Agriculturist*, 751 Broadway, New York. Price, $1.50 per year; single numbers, fifteen cents.

We will club the *American Agriculturist* with the "Apiculturist" for $2.80

per year, every person who immediately subscribes to receive the engraving free for next year and this year also.

The Proceedings of the Seventeenth Annual Convention of the North American Beekeepers' Society, held at Indianapolis, Ind., Oct. 12, 13 and 14, 1886, will be issued, in pamphlet form, by Thos. G. Newman & Son, 925 West Madison St., Chicago, Ill. Price, 25 cents per copy.

Mr. M. E. Hastings has kindly sent to this office one of his "Perfection Bee Feeders." It is something new, and we see no reason why it will not work perfectly. See his "ad" in another column.

Discount on Prices of Supplies.—We are prepared to fill orders for any kind of goods found in our price list, and a liberal discount will be made to all customers who will purchase this fall or at any time before Jan. 1, 1887.

Discount as follows: one dozen Drone and Queen-traps, one made up (thirteen in all) $2.75; regular price, $3.50. Sample, latest improved, by mail, 50 cents; regular price, 65; or Trap and Apiculturist, one year, $1.35.

Queen-nursery, 18 cages, which Mr. Doolittle says is the best he has seen, by mail, $1.25; regular price, $1.60.

We intend to sell goods very cheap from now until Jan. 1, 1887, and a most liberal discount will be made on all goods except the Bay State Reversible Hive; the price for that is as low as we can place it.

We desire to retain on our list the name of every subscriber and as an inducement for all to renew and to new subscribers a discount of from twenty-five to fifty per cent will be made on any one article found in our list of supplies. Our price list of apiarian supplies will be found on the last pages of any number of the "Api."

NOW IS THE TIME.

Send $1.50 and get the Am. Apiculturist one year, and a copy of the Beekeepers' Handy Book.

The book contains 300 pages, 100 fine illustrations, is handsomely bound in cloth and sent to each subscriber, by mail, for fifty cents in addition to one year's subscription to the "Api." Regular price of book, $1.10 by mail.

This work treats of the best methods for rearing queens, and is pronounced by Rev. L. L. Langstroth to be the *best* authority on this important branch of beekeeping.

CONVENTION NOTICES.

The New York State, the Eastern New York and the New Jersey and Eastern Beekeepers' Associations will hold their great united convention at Albany, N. Y., on Jan. 18, 19 and 20, 1887. This convention will be one of the largest, if not the largest, ever held anywhere in this country and it behooves every beekeeper in the country te attend. A grand exhibit of apiarian fixtures is promised. An unusually brilliant programme will be prepared and announced later.

The next annual meeting of the Nebraska State Beekeepers' Association will be held in Lincoln, Nebraska, on Wednesday, Jan. 12, 1887. Location of Hall to be used and Hotel accommodations will be given after further arrangements have been made.

H. N. Patterson, *Sec.*

The next annual meeting of the Michigan State Beekeepers' Association will be held in Ypsilanti, Mich., on Dec. 1 and 2, 1886.

H. D. Cutting, *Sec.*

The American Bee Journal is the best weekly bee paper published in the English language. Price $1.00 per year.

If any new subscriber to the "Apiculturist," or those who renew, desire to take a weekly Bee Journal we will send both papers for $1.70.

THE DRONE AND QUEEN TRAP.

For the benefit of Mr. Ernest Root, son of A. I. Root, Editor of *Gleanings in Bee Culture*, and all others who have a wrong impression of some of the uses of the drone and queen-trap, we publish the following conversation taken from *Gleanings* Oct. 15. It seems that our friend, Dr. C. C. Miller, while on his way to the North American bee-keepers' convention at Indianapolis, "stopped over" to visit Mr. Root. While there the Dr. desired to see one of "Alley's drone and queen-traps," he never having seen one. A trap was shown him, when the following conversation took place between the two persons above named.

"Just at this time the apiarist came into the apiary to commence work. When he came up where we were talking I handed him the smoker I had just filled.

"By the way," said the doctor, when the apiarist had left us. "I should like to see one of the Alley drone-traps."

"Oh? yes, sir," said I. "Here is one on the shelf, and also one of the Batch-elder."

The doctor then explained that he had apiaries located out from his home, and that it sometimes happened, during the swarming season, that it was three or four days before he and his assistants could get to them.

"Now," said he, "do you think the Alley trap, from your experience, would catch a queen when the swarm issued, and keep her alive three or four days?"

"I think not, as the trap is now constructed. Four or five hours, possibly a day, would be as long as she would live," I replied.

I then explained that there was a little device for letting the queen go back into the hive, when the bees, discovering her absence, had returned.

"But that is not what I want," said my friend. "The queen for me must be kept alive in the cage for three or four days." After discussing it for awhile, and referring the matter to "A. I.," it seemed at least feasible that the queen might be thus kept after the swarm had issued.

I then attached one of the Alley traps to a chaff hive, that the doctor might see how the bees behaved. As I have, in a former issue, explained, the bees on returning seemed a little confused. While we were watching, a number of said bees passed the trap without any apparent difficulty, and with pollen adhering to their legs too."

Is it not strange that a man with Dr. Miller's experience in bee culture should not know that a queen during the warm weather will live in almost any place twelve hours without food? I am equally surprised that our young friend Root should make such a statement. The idea that a queen will not live but four or five hours in one of the drone-traps is, indeed, queer.

Dr. Miller has an apiary some distance from home and would like to use the traps if assured and convinced that it is practical and what he needs. Well, now, Dr., I will send you as many traps as you need, and if they do not do the work as well as you desire, that is, catch the queens when a swarm issues, and keep them alive, at least, a week, I will make you a present of all the traps you call for.

I have repeatedly had swarms issue and removed the trap, queen and all, a few feet from the hive the bees came from and there it has remained in some cases, nearly two weeks. The bees, about a pint in all, would stick to the queen, and take a notion to swarm out the trap about every day, but as the queen could not leave they would quickly return. I should be willing to pay $10 for each queen that dies in the trap in less than eight days. The best evidence that a colony has swarmed in the absence of the apiarist is the fact that the queen is in the trap, and one may know that a queen is in the trap by the quantity of bees that will remain in it when a queen is there. Hence, any one may know at a glance, where the trap is used, that a swarm has issued.